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## Original Communications.

ARTICLE I.

### THE TREATMENT OF ERYSIPELAS.

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There are few diseases which have called forth a greater variety of methods of treatment in times past than erysipelas, and there are few diseases the management of which is at the present time of a more routine nature.

Since the introduction of the muriated tincture of iron into its treatment, and its high recommendation as a specific for the affection, it has been prescribed by physicians almost universally as a matter of routine practice.

The reputation it has gained has, however, been sustained by experience. The local measures which have been recommended, and which are still in favor with different practitioners, are greatly varied as the taste of the individual may select. The

application of cold has been used with especial frequency, and applications of nitrate of silver, iodine, and various dusting powders, have had, and still have, their advocates.

There has been a tendency to either one of two extremes in the treatment of erysipelas, viz.: to keep in view its constitutional character, and to depend mainly upon the so-called specifics; or to consider the disease as merely of an inflammatory nature, and to treat it as a local inflammation. There is really little to offer that is new in the treatment of erysipelas, but as a large number of cases, especially of the severer types of the disease, do not usually come to the notice of the general practitioner, and are seldom seen under circumstances favorable for comparison of the results of different remedial measures, excepting by the surgeons of the larger hospitals, a general survey of the treatment found to be most useful in an observation of several hundred cases, may be of service. I shall endeavor to say but little aside from the treatment of the disease, merely mentioning a few of the interesting or practical points which I have had the opportunity of observing.

Erysipelas is usually classified as, first, simple cutaneous; second, cellulo-cutaneous, or œdematous (Lawrence); and third, cellular or malignant, the latter being also termed "diffuse cellulitis." The principles which govern the treatment of these different forms are essentially the same in all, and the classification is itself somewhat arbitrary, as is evident to any one who has observed the affection to any extent; for many cases of cutaneous erysipelas, particularly of the face, are accompanied by a certain amount of cellulo-cutaneous inflammation and suppuration; often with considerable sloughing of the tissues. This is seen especially in the tendency to suppuration and sloughing of the eyelids, and to the formation and burrowing of pus beneath the scalp in cutaneous erysipelas of the head and face. We frequently, also, see cases of the cellulo-cutaneous form which are essentially of a malignant type from their commencement. Cellulo-cutaneous erysipelas of the genital region, for example, has a special tendency to malignancy.

The first consideration in regard to the management of erysipelas, is evidently the question of prophylaxis.

Erysipelas is undoubtedly contagious, and is by some authorities regarded as extremely so. It appears to me, however, that its contagiousness is somewhat overestimated. Having had a large general surgical service, and a considerable number of cases of erysipelas under my charge at the same time, I have enjoyed an excellent opportunity of observing the contagious properties of the disease. The cases of erysipelas which developed primarily in the surgical wards were very few, but cases were from time to time accidentally introduced into the wards, through mistakes in the distribution of the patients. Such cases were, of course, immediately isolated, but free communication, through the medium of the assistants and nurses, was maintained with the erysipelas wards, no extraordinary precautions being taken to prevent contagion, although ordinary cleanliness was observed. I have also frequently seen patients with open wounds or ulcers exposed accidentally to contagion by being sent to the erysipelas pavilions by mistake, without their contracting the disease.

During a period of eighteen months there was no epidemic of erysipelas in the hospital, nearly all cases having developed in the city previous to their entrance into that institution. Caution, however, should be exercised, in spite of the facts mentioned, inasmuch as a considerable degree of contagiousness undoubtedly exists. This fact indicates the measures of prophylaxis. Strict cleanliness on the part of attendants, and in the care of surgical instruments which may be brought in contact with the case, with immediate and careful isolation of the affected, are to be strongly insisted upon. The caution necessary to prevent the transmission of contagion to the lying-in room is too obvious to require comment. As conditions of debility predispose to erysipelas, the systems of persons exposed to contagion should be maintained above par, if possible; particularly in prospective operative cases.

We now come to the general considerations governing the curative treatment of the disease.

In all cases, of whatever type, the asthenic character of the inflammation must be borne in mind, and should constitute the chief indication to be considered, our chief aim being to prevent or counteract exhaustion. This bears more especially upon the cellulo-cutaneous and cellular forms. The presence of any con-

stitutional fault or cachexia, or of chronic alcoholism, renders the tendency to the typhoid condition still more marked, and should be combated accordingly. The danger of suppuration and sloughing, which perhaps may be followed by septic infection, with its train of attendant evils, must also be remembered.

The constitutional condition depends largely upon the extent and intensity of the local inflammation, thus enhancing the importance of local treatment, and the selection of such remedial applications as will give the greatest amount of relief.

In the treatment of simple cutaneous erysipelas in a healthy person, whose system is not debilitated by chronic alcoholism or privation, and who is free from any cachectic condition, and in whom there is no complication, but little is required save attention to hygiene and measures to allay local irritation and fever; these cases tending to recovery even without interference, although comparatively slight influences may render them serious.

It had been my practice to administer the tincture of the chloride of iron with chlorate of potassium in large doses, preceding it by a brisk saline cathartic, and using as a local application lead and opium in cold solution, with attention to tonic and supporting measures as required.

The usual hospital routine varied but little from this; and it is, I believe, the method of treatment resorted to by a great many practitioners. In a certain proportion of cases suppuration of greater or less extent ensued; and in view of the fact that the continuous application of cold to a tissue affected with a low type of inflammation still further lowers its vitality, thus favoring the formation of pus, I began the use of moist heat, continuously applied, covering the affected part with sheet lint, saturated with a solution of lead and opium as hot as could be borne, this being renewed as frequently as necessary to maintain an even degree of heat. I also combined salicylic acid with the iron, instead of the chlorate of potassium, with the idea of obtaining the antiseptic and antipyretic effect of the former drug, having in view the specific and constitutional character of the disease. The results were extremely gratifying, the hot applications rapidly reducing the swelling and tension of the part, with marked relief of the pain, which rendered them especially grateful to the

patient. By thus affording a greater amount of relief to the local irritation, much more marked reduction of the constitutional disturbance was noticed than had previously been obtained by the application of cold. The combination of the salicylic acid with the iron acted remarkably well, the duration of the cases being shortened, and the fever and tendency to asthenia diminished. Subsequently, in the *London Practitioner* for October, 1879, I observed a formula for the preparation of the salicylate of iron, published by Walls White, which I have found to be a still better preparation for the administration of the two drugs in combination. With some modifications, it is as follows:

℞. Ferri sulphat .....ʒi ℈ ii.
Sodii salicylat.....ʒii.
Sodii acetat.....ʒi ℈ i.
Glycerinæ .....ʒiv.
M. Sig. ʒss dose.

Each ounce of this preparation is said to contain thirty grains of the salicylate of iron, the dose being found ʒii to ʒss, which may be given every two to four hours, according to the exigencies of the case. I have found this preparation to be all that was claimed for it. It is less liable than the tincture of the chloride of iron to produce gastric irritation or constipation; it promotes diaphoresis, and has a decided effect upon the temperature and pulse. I have used the same drug after surgical operations to prevent septicæmia, in puerperal septicæmia, and in many febrile affections as a substitute for quinia, with marked benefit. The excessive doses of the tincture of the chloride of iron so often administered are, I think, injurious, causing disturbance of both the stomach and bowels; and, moreover, irrational, inasmuch as the absorption of such large quantities is hardly probable, on account of the irritation and functional disturbance of the gastric mucous membrane which is produced by them.

In cases of cutaneous erysipelas which are decidedly sthenic from the beginning, or in the severer forms of the disease under similar circumstances, the old-fashioned combination of calomel and opium, still clung to tenaciously by many surgeons, more especially in England, is undoubtedly advantageous, and it is my own custom to administer it for the first twenty-four or thirty-six

hours after the onset of the disease, in such instances. It seems to modify and shorten the course of the inflammation, limiting exudation, and the tendency to the formation of pus. We also obtain the anodyne effect of the opium. It should be used only in the sthenic cases, and then with caution, keeping in mind its depressant effect, and the danger of ptyalism. I ordinarily give about gr. j of the mercurial, with from gr. ½ to gr. j of opium every two or three hours.

In small children, the simple form of erysipelas is probably best treated by painting the affected parts with tr. benzoin co. or liq. ferri persulph., and then swathing them in cotton wool, with the adminstration of good food and small doses of quinine and iron. I have seen a number of such cases of simple cutaneous erysipelas in young children confined in a hospital ward, apparently as the result of damp. The ward was one used for convalescent paupers, and as a nursery. For some time, occasional outbreaks of cutaneous erysipelas in the children, and of acute articular rheumatism among the women, had occurred, and upon investigation, these had been found to be coincident with the occasional scrubbings which the floor of the ward received, it being imperfectly dried thereafter. As soon as this state of affairs was properly regulated, the erysipelas and rheumatism no longer occurred. The children recovered, with but one exception, although the erysipelatous blush covered over nearly the whole body in several instances. The case that proved fatal was one in which the navel had been neglected by the midwife, and in which gangrene of the abdominal walls occurred.

The application of the tincture of iodine, and the attempt at limitation of erysipelas by the use of nitrate of silver, are not only inefficacious in accomplishing the object sought, but appear to be unnecessary sources of irritation in the majority of instances. I have given them both a fair and extended trial. Cold applications of the muriated tincture of iron, of salicylic acid, or of the compound tincture of benzoin, are undoubtedly beneficial, but in no wise to be compared with moist heat, especially when it is combined with a sedative. Especial attention should be paid to these applications, for if they are allowed to become cold, they will prove injurious. Where they cannot be

faithfully and continuously applied, cold applications of some of the drugs mentioned will prove more reliable. It is sometimes well to combine a diaphoretic with the internal remedies. In cutaneous erysipelas of the face, the parts should be covered with a mask of sheet lint, dipped in the hot solution of lead and opium. The ordinary lead and opium lotion in use in the New York hospitals contains about ℥ii of the acetate of lead, with ℥ss of the tincture of opium to the pint of water. My own practice is to prepare a solution of about double this strength, thus increasing its anodyne and sedative effects. A saturated solution of the bicarbonate of soda, so highly extolled in the treatment of burns, is also an excellent local application.

Especial attention should be given to the condition of the eyelids, and if they are very tense and swollen, or appear boggy and infiltrated, with a great probability of suppuration or sloughing, free incisions ought to be made at once. These incisions should be made in the long diameter of the lid, and sufficiently free to allow the escape of the serous fluid with which they will be found to be infiltrated. Little or no scarring results, although the incisions may seem quite extensive, on account of the extreme swelling of the parts. It is better to make early incisions in this manner, even though the probability of sloughing be not very great, than to run any risk of its occurrence. Should sloughing supervene, great deformity and cicatricial contraction of the lids may result, and prove a serious calamity. The scalp should be very carefully watched, as suppuration and burrowing beneath it may occur very insidiously, resulting in troublesome sickness, if not in destruction of the pericranium and caries of the bones of the skull. Should any pocketing of pus be detected, free exit should be given to it at once.

There is often, in extensive facial erysipelas, severe conjunctivitis with profuse secretion. In such an event, the secretions should be carefully removed, and the inflammation allayed by frequent and prolonged syringing with warm water, containing about ℥ii of the bicarbonate of soda to the pint. Erysipelas of the head, neck, and face, either singly or collectively, is quite liable to be accompanied by considerable cerebral disturbance, which calls for some modification of the treatment. These cases

may be dependent upon erysipelatous inflammation of the cerebral structure or its membrane, or may occur independently of it, no lesion whatever being found explanatory of the symptoms. I have seen in several instances, notably in a case of cellulitis of the neck, and another of erysipelas of the orbit, symptoms which seemed decidedly to indicate meningitis, but in which, upon autopsy, no pathological evidence of cerebral or meningeal inflammation were detected. In those cases involving the neck, disturbance of the return circulation from the brain has been given as an explanation of the symptoms; but as the same symptoms, and in a more marked degree, are seen in case of erysipelas limited to the orbit, or to situations remote from the veins returning the blood from the cranial cavity, and no marked evidences of cerebral congestion are found, this view is hardly tenable. I think that there is some peculiar effect produced upon the cerebral substance by the erysipelatous poison, which gives rise to its profound functional disturbance, independently of inflammatory changes, or conditions of congestion, in a manner analogous to the action of other toxic poisons which produce marked effects upon the functions of the brain. Such cases as those I have just described are not, of course, to be classed under the head of cutaneous erysipelas, but as the cerebral symptoms produced by the latter are under consideration, they would seem to be appropriately discussed in that connection.

If the delirium be of the active variety, as is probable if the erysipelas be sthenic in character, a brisk saline cathartic should be given, the head shaved, and an ice-cap applied. Internally, a combination of bromide of sodium, ergot, and chloral hydrate will be found most beneficial. Should the temperature be high, cold sponging or the wet pack should be resorted to. The cold bath is recommended by Volkman, but seems rather too radical a measure for such cases. Ringer gives aconite, and Lobbe advises veratrum viride. Either of these drugs will prove useful, but must be cautiously given. If the delirium be of the low, asthenic type, measures to control high temperature should be conjoined with free stimulation, and the administration of opium, the latter being best given as the improved Dover's powder, containing the bromide instead of the sulphate of potassium.

Delirium is especially liable to occur if the patient has been addicted to the use of alcohol, and its treatment should be conducted upon essentially the same principles as in other cases. The cases which are due to extension of the inflammation to the cerebral structures, or to the condition simulating it, are to be treated as suggested for the cases of simple delirium, but with little hope of success, as they are almost invariably fatal. In addition to the ice-cap and other measures, leeches should be applied to the mastoid region. In the milder cases of delirium, this is hardly advisable, as there is some danger of the leech bites acting as new foci for the inflammation.

Erysipelas of the fauces may occur in erysipelas of the head and face, and may lead to œdema glottidis, or to the severer forms of inflammation and sloughing. The deeper seated varieties of erysipelas of the neck are especially liable to extension to the fauces, with resulting œdema of the glottis. Erysipelas of the fauces may, however, occur primarily, and remain circumscribed. In the treatment of this complication, the application of the nitrate of silver in the strength of forty grains to the ounce, if applied at the outset of the inflammation, will prove useful, and frequently abort it. Gargles of sulphurous acid in hot solution, with the same remedy internally, are useful. Small pieces of ice, instead of the hot gargle, may be given. Hot poultices should be applied to the neck. If convenient, steam inhalations will be excellent, and very grateful to the patient.

The effect of erysipelas upon chronic skin troubles may not be out of place if mentioned in connection with cutaneous erysipelas. I recall a case of the form of leprosy, known as elephantiasis Græcorum, in which cutaneous erysipelas supervened. It was pronounced "leprosy fever" by an enthusiastic dermatologist, who predicted a fresh eruption of tubercle. The case proved to be erysipelas, however, and was followed by a marked improvement. The acute inflammation evidently excited a new action, resulting in resolution and absorption of the infiltration to a certain extent. About as fortunate an accident as can occur in a chronic ulcer or eczema of the leg, is the supervention of erysipelas, provided the patient be in good condition, and the inflammation not too extensive. On the subsidence of the acute

symptoms, resolution of the indurated tissue about the ulcer, and rapid healing frequently ensue from the new action thus induced. As regards the relation of syphilis to erysipelas, I have seen some cases in which the inflammation seemed to determine the eruption as a result of general systemic disturbance, and again, have seen an eruption of syphilis fade with unusual rapidity upon the occurrence of erysipelas.

It is always well, however, in any case of erysipelas in which there is a syphilitic history, to administer a mercurial, especially during the healing of any ulcers or sinuses which may have resulted.

The cellulo-cutaneous or phlegmonous erysipelas is in all instances a serious affection, and both the constitutional and local measures are proportionately important. The marked tendency to asthenia, and the suppuration and sloughing that usually attend it, with the possibility of septic absorption and consequent toxæmia, are elements requiring the most careful consideration. In a short time after the onset of phlegmonous erysipelas, the affected part becomes of a deep scarlet or dusky red hue, and very tense and firm to the touch. There is a sense of extreme heat, with quite severe pain, and from the first, symptoms of exhaustion may be present. If not interfered with, suppuration and sloughing usually occur, and may result in serious destruction of tissue. These results are dependent upon several conditions, viz., depreciation of the vitality of the part as a direct result of the intense inflammation, and extreme tension from inflammatory infiltration with the ensuing great disturbance of the circulation. The attendant exhaustion is in most cases directly proportionate to the amount of local destruction, hence the great importance of limiting it as far as possible. The first indication being to relieve the tension of the inflamed tissue, free incisions into the affected part must be made at once. We thereby secure a certain amount of local depletion in addition, which is highly beneficial. Some authorities recommend a single long incision, but this may give rise to considerable shock and hæmorrhage, and but imperfectly accomplish the desired object. It is therefore better to make a large number of small incisions, varying from one to three inches in length, the number and situation

of which are to be regulated by the amount of tension present. The limb should now be fomented with hot carbolized or borated water until all hæmorrhage has ceased, and an "oakum poultice" applied. This consists in a thick layer of oakum or tow, saturated with water as hot as can be borne, and covered with a layer of oiled silk or muslin. The water should contain some antiseptic, and about ʒ ss. of the tincture of opium to the pint. These applications should be continued until resolution takes place, unless suppuration and sloughing occur in spite of prompt interference, when poultices of other kinds should be applied, to favor the separation of the sloughs. These may consist of the ordinary linseed meal, with the addition of laudanum, to increase the emollient effect, or if the sloughs and discharges be fetid, a poultice composed of equal parts of pulverized wood charcoal and linseed meal, mixed with brewer's yeast instead of water, should be used.

These disinfectant dressings lessen the liability to septic infection, and prevent fetor. All pocketing and collections of pus should be relieved by free incision. The importance of this cannot be over-estimated. The constitutional treatment is extremely important, and free stimulation should be the rule. Quinine should be given freely and preferably in small doses frequently repeated, a moderate degree of cinchonism being maintained. As a general rule, I administer about gr. ii. every two or three hours, unless gastric disturbance be thereby induced. The latter contingency is less liable to occur than when the drug is given in larger quantities, at longer intervals. The salicylate of iron should also be given in the doses before mentioned.

Milk punch is a useful form of stimulant and nourishment combined, and appears to be more acceptable to the stomach than egg-nog, which appears rather difficult of digestion. If obstinate vomiting occurs, the beef peptone will be found very serviceable, as it presents a greatly concentrated and readily assimilable form of nourishment. I prefer the preparation known as Gaunt's. This may be given in doses of a teaspoonful every hour, either in milk or a small quantity of water. If no gastric disturbance be present, the carbonate of ammonia and digitalis may be given, the character of the pulse being the criterion for its use. I

believe that this combination has a more markedly beneficial effect than would be accounted for by its action as a mere stimulant. When the stomach becomes absolutely intolerant of the various remedies, rectal alimentation and medication are, of course, necessary. The temperature, if excessive, should be controlled by the pack or cold sponging, as in the other forms of the disease. If the incisions be sufficiently numerous and free to relieve all tension, and are resorted to early in the disease, serious destruction of tissue rarely occurs, and consequently death from exhaustion is infrequent. Serious hæmorrhage is rare, it being usually readily controlled by styptics. In making the necessary incisions, care is to be taken not to allow the escape of a sufficient amount of blood to cause general depletion.

Cellulo-cutaneous and cellular erysipelas of the genital region are exceedingly dangerous, both from the especial tendency to asthenia, and the danger of extensive destruction of the parts involved, the cellular tissue in this situation being especially lax, and its vitality easily destroyed. The rapidity with which sloughing sometimes occurs, is astonishing, and I have seen the testes laid completely bare in a few days. In these cases, nothing but very radical measures are of any avail. A free crucial incision must be made for the whole extent of the swollen scrotum, with a sufficient number of smaller incisions upon both penis and scrotum, to relieve the tension. Hot antiseptic poultices should now be applied, and very free stimulation, with highly nourishing and concentrated diet resorted to. Large quantities of alcoholics, with the carbonate of ammonia and digitalis may be necessary. An ounce of brandy or whisky every hour may be beneficial in extreme cases. Although the destruction of tissue in some of these cases is very great, the amount and rapidity of repair is remarkable, as seen in the case I have cited, in which both testes were cleanly exposed, there being but a small ragged portion of integument left superiorly, but in which granulation and repair took place so perfectly that the organs were comfortably covered in, in the course of a few weeks. The scrotum was very greatly abbreviated, but no discomfort or pain were complained of by the patient.

There is little more to be said with especial reference to the cellular form of erysipelas, as the indications are essentially the same as in the severe cases of the other varieties. This type is marked by its still greater tendency to exhaustion, and the condition known as erysipelas typhoidea by some writers, and the more marked destruction of tissue, the inter-muscular areolar planes being often invaded, with the increased liability to septic absorption and resulting toxæmia. Especial care must consequently be taken, to permit the escape of pus and sloughs, with strict antisepsis, and an amount of stimulants regulated by the condition of the heart.

I wish incidentally to mention a peculiar affection, called by some superficial circumscribed gangrene, but which I think is really a form of erysipelas. This is usually met with upon the lower extremities, and in the few cases which have come under my observation, the disease began upon the dorsal or lateral surface of the foot, and extended upward upon the anterior surface of the leg. There is little pain or tumefaction of the part, which rapidly assumes a dusky, purplish-red hue, and soon becomes covered with large blebs, the surface beneath them being in some places like wash-leather or wet chamois skin. In a few days, the sloughing integument and cellular tissue separate and come away, and the tissues are laid bare down to the deep fascia and muscles. The affection is abruptly circumscribed, and does not seem to be connected with any special condition of constitutional depression. The treatment consists in tonics and hot poultices, and the cases result favorably if uncomplicated. Skin grafting is usually called for, when the ulcerations are in proper condition, thus preventing serious deformity from cicatricial contraction, which is apt to result. Some obscure local condition of enervation or vaso-motor disturbance may possibly be the prime factors in the pathology of these cases, but I think that they properly belong to the erysipelatous inflammations.

The special conditions existing in traumatic erysipelas require passing notice. They are an increased danger of septic infection, and in certain cases, the shock and anæmia resulting from the injury and its attendant hæmorrhage. Direct contagion is usually the source of these cases, and is rare, if antisepsis be

properly attended to. Strict attention to cleanliness about the wound, and the liberal use of antiseptics, are indicated, as there is a danger of toxæmia proportionate to the extent of surface involved and capable of absorption.

In conclusion, I will endeavor to give a comprehensive *résume* of the treatment of erysipelas as I have presented it.

In the treatment of erysipelas, in all its forms, we have to consider:

First. The constitutional condition which may have predisposed to the disease.

Second. The lesion which has acted as its exciting cause, if the inflammation be traumatic.

Third. The tendency to local destruction of tissue, and the formation and burrowing of pus.

Fourth. The tendency to the typhoid condition, proportionate to the severity of the disease.

Fifth. The danger of septic absorption and toxæmia.

Sixth. The danger of propagation by contagion.

Seventh. The liability to serious deformity from cicatricial contraction.

1. The first indication is to be met by measures tending to correct the cachexia present, if possible. 2. The second, by careful attention to the wound, and rigid antisepsis. 3. The tendency to local destruction of tissue is to be combated by free incisions adequate to relieve all tension, and the application of hot dressings to maintain the vitality of the part and promote absorption of inflammatory exudate, and also to relieve the pain. The possibility of pocketing and burrowing of pus should be prevented by immediate incision into all purulent collections. 4. The supervention of typhoid symptoms should be prevented, if possible, by proper analeptic and tonic measures, and the liberal use of stimulants. 5. The fifth indication calls for perfect cleanliness and prompt removal of dead tissues which might excite decomposition of the discharges and consequent septic absorption; with the adoption of antiseptic dressing. 6. Transmission of the disease should be prevented by strict isolation of the affected, cleanliness, both in regard to the seat of disease and the instruments used, and on the part of the attendants, with the

conscientious use of antiseptics. 7. Deformity may be prevented by careful management of the ulcers resulting from the disease, and the judicious use of skin grafting. Various mechanical contrivances may be necessary in certain situations, to prevent contraction.

137 *Madison St., Chicago, June* 22, 1882.

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## ARTICLE II.

### ON THE CAUSES, AND BEST MEANS OF PREVENTING THE BOWEL AFFECTIONS OF YOUNG CHILDREN. By N. S. DAVIS, M.D., etc. Read to the Section on Diseases of Children at the Meeting of the American Medical Association, in St. Paul, June 8th, 1882; also, by request, to the Chicago Medical Society.

When it is remembered that one-third of the human race perish before they reach five years of age, and that a large percentage of these early deaths are the direct result of attacks of serous diarrhœa and cholera morbus, it will be conceded that no subject is more worthy of careful study than the pathology and prophylaxis of these affections. I mention these together because all measures designed to prevent disease must be intelligently adjusted either to the removal of the causes, or to a neutralization of their effects, or else they will fail to accomplish any useful purpose. Nearly all the public sanitary and hygienic measures of the present day are aimed at the removal or prevention of the causes of disease, both predisposing and exciting. But there are many influences which either predispose to or excite attacks of disease which are not under human control. The problem presented for consideration is not how to prevent or destroy them, but how best to shield the human system from their injurious effects. For instance, bad food may be destroyed and good substituted; bad air in dwellings may be changed by ventilation; soil, wet and filled with decomposable matter, may be drained and cultivated, but the meteorological conditions of the atmosphere, whether they relate to impurities, sudden and

extreme changes or waves of continuous high or low temperature are not amenable to our control, and yet much can be done to mitigate or prevent their injurious effects. Nearly all the recent writers on the diseases of children class the cases of serous diarrhœa and cholera morbus in children under two years of age, usually called summer complaint and cholera infantum, with local inflammations under the general name of catarrhal gastro-enteritis, and while they all assert that these forms of disease are most prevalent and fatal during the warmest months of summer, they set forth as the chief causes, improper feeding, impure and changed milk, impure air, the process of dentition or teething, and overworked, badly fed and unhealthy mothers.

These causes are represented to produce gastric or intestinal indigestion, or both, which so increase the irritation of the mucous membranes as to cause a more or less rapid serous exudation into some part of the intestinal canal.

Indigestion is thus represented as the immediate cause of the catarrhal irritation, while the indigestion itself is attributed to impure and confined air, unwholesome food, cutting teeth, and the influence of badly fed, overworked, and unhealthy mothers and nurses. The great difficulty in the way of assenting to the correctness of this view of the etiology of the diseases under consideration, is, that all the alleged causes exist in nearly equal ratio at all seasons of the year, and in all large cities, without regard to their topographical surroundings. For instance, there is generally no more attention paid to ventilation and pure air in the winter than in the summer; there are certainly on the average no larger number of infants cutting teeth in July and August than in December and January; the milk distributed in all our cities is quite as liable to be diluted and adulterated in the cold as in the warm season of the year. But if we turn to the mortuary statistics of all the Northern and Eastern cities we shall find the prevalence of serous diarrhœa or summer complaint and cholera morbus in young children, limited almost wholly to three months of each year. For instance, in this city (Chicago) in the reports of the Health Department for 1877, we find 8 deaths recorded from cholera infantum in April, 6 in May, 23 in June, 246 in July, 163 in August, 69 in September,

13 in October, and only 2 in all the remaining five months of the year. Substantially the same ratio for the different months will be found in the records of every year. Again, the diseases under consideration are not only limited to a certain part of each year, but they are also limited mostly to cities and densely populated districts so located that there is a wide range of temperature between winter and summer, as well as protracted periods of continuous high temperature during the latter season. In Boston, New York, and Chicago the range of the mercury from the coldest days of winter to the warmest of summer is generally equal to 38° C. (100.5° F.), while in New Orleans and San Francisco it is less than half that number of degrees, and the nights are almost always cool. And from a comparison of the mortality statistics of all these cities, we find only *five* deaths from cholera infantum for every 10,000 of the inhabitants in San Francisco, and seven in New Orleans, while in Boston, New York and Chicago the ratio varies from twenty-five to thirty deaths for every ten thousand of their inhabitants. I have found no evidence that the milk distributed in San Francisco and New Orleans was better than that furnished in Boston and Chicago; neither is there any proof that the nurses and nursing mothers of the two first named cities are more free from mental and physical infirmities than those of the two last. And yet the ratio of deaths from cholera infantum is five times greater in the latter than in the former.

There must, therefore, be some efficient cause or causes for the prevalence of the disease not common to all large cities, nor active at all seasons of the year. For twenty-five years I have noted carefully, and part of the time made written memoranda, concerning the prevalence of the serous diarrhœa and cholera morbus in connection with the coincident meteorological conditions of the atmosphere.

For three years parallel records were kept by active general practitioners in Cairo, Davenport and Omaha. The detailed results of these observations and records were communicated to the Section on Practice of Medicine, etc., and may be found in the volumes of Transactions for 1875–77–79. They are sufficient to establish the following propositions:

First. That the prevalance of the affections under consideration is limited principally to July, August and September, commencing with the first wave of high atmospheric heat that continues days and nights for more than five days, which in the latitude of Chicago is sometimes the last week of June, but more frequently the first week in July, and continues more or less during the succeeding ninety days.

Second. That while the deaths from these affections in any city or given community will be nearly the same in the two first months after they begin in July and August, the date of the initial symptoms or beginning of the disease in three-fourths of all the cases will be in July, very few originating after the first of August. Many cases commencing in July continue until the months of August or September, causing wasting and death.

Third. That it is not simply high or extreme heat of temporary duration, such as that of a single day or any number of days, with cool nights, which favors the development of the disease, but continuous high temperature day and night for several days; and if, in addition to the heat, the air be stagnant from lack of winds or obstructions, as in large cities, or from defective ventilation, the effect is greatly increased. This explains why these affections are more numerous and fatal in cities than in rural districts, and why they prevail so little in even large cities located in warm climates provided the location be such as to afford cool breezes at night.

Fourth. That while the great majority of attacks which occur in any given summer are found to have their beginning in July, or during the first thirty or forty days after the first wave of protracted high temperature for the season, they are not equally distributed over the whole of the month. Having thus traced the origin of that part of infantile mortality caused by this disease, let us inquire for a moment how this combination of circumstances can affect the living human body. We have the physical law that the higher the temperature of the air the rarer it becomes, and the less oxygen is contained in a cubic inch. A person breathing a given quantity of air at a high temperature would receive less oxygen than at a lower temperature. Stagnant air becomes more rapidly exhausted than moving, and the

physical law of expansion by increase of heat applies to the living as well as to dead matter, consequently high heat acting on the living body tends to increase the distance of the atoms from each other, and thereby lessens the force of vital affinity, while it increases the excitability or susceptibility to impression. The capacity of the blood for taking up oxygen or holding it in suspension depends much upon the proportion of saline elements it contains, and under a continuous high temperature the increase of cutaneous exhalation rapidly diminishes the free salts of the blood and lessens the capacity to receive the oxygen from the air cells of the lungs in exchange for its carbonic acid gas. Colitis and recto-colitis, or dysentery seldom occur until late in the season, when warm days are followed by cool nights and frequent changes from wet to cold occur; and even the indigestion which has been so generally suggested as a cause of summer complaint is itself the result of the impairment of natural gastric and intestinal secretions, and the increase of mere serous exudation—the primary fault not being so much in the quality of food as in the morbidly sensitive and relaxed condition of the whole inner surface of the digestive canal. The children are affected more than older persons because of the less mature development and greater sensitiveness of their gastric and intestinal mucous membranes and glandular structures, and their much more constant confinement indoors.

If this is correct, it indicates clearly that our efforts to lessen infant mortality from these diseases must embrace such measures as will secure for young children a better supply of fresh, pure air, for increasing the oxygenation and discarbonization of the blood and maintaining the activity of the vaso-motor nervous system; and as will counteract the effects of high temperature by increasing the general tonicity and lessening the excitability of the tissues generally. Measures for the first object must consist in securing better ventilation of dwellings, and especially nurseries and sleeping rooms during the warmest part of the summer, the sending of young children with their mothers and nurses from densely populated districts to moderately elevated healthy locations, or to floating hospitals, or receiving ships on large bodies of water during the special period of high heat. For

accomplishing the second purpose, I know of no measures that are so efficient and at the same time within the reach of the poorest part of the population, as the judicious use of the sponge bath. Whenever the human system is relaxed and rendered morbidly sensitive by continuous high heat, causing the infant to be languid, restless and sometimes pale, a free bathing or sponging of the whole surface with water simply as cool as is comfortable, always produces a refreshing and invigorating influence, which continues from six to twelve hours. Consequently, if mothers and nurses could be so instructed by their family physician that during every wave or period of high atmospheric temperature in which the mercury did not fall below 70° during the nights, each child under two years of age should be regularly given a full sponge bath in the evening as well as in the morning, and their sleeping rooms as well ventilated as possible; such a course would diminish the attacks of serous diarrhœa and cholera infantum one-half, and consequently very greatly lessen the infant mortality from these affections. In the most oppressive evenings the wet bandage may be left around the trunk of the body after the bath.

It is well-known to every careful observer that a large majority of all the attacks of this form of disease show their first beginning during the last half of the night or early in the morning, owing to the long continuance of the high temperature, coupled with the more still and confined air of the night. The increased tone of the whole vascular system produced by the stimulant and tonic effect of a comfortably cool sponge bath on the function of the vaso-motor nerves, applied in the evening, would enable thousands of these little, restless sufferers to pass the whole night unharmed, when without it the dreaded sickness would begin. The views I have presented in regard to the causes and nature of the affections called summer complaint and cholera infantum also afford clear indications for the most rational and successful application of remedial agents in the treatment of those affections in all their grades of activity.

## ARTICLE III.

VALEDICTORY ADDRESS TO THE GRADUATING CLASS OF THE WOMEN'S MEDICAL COLLEGE OF CHICAGO, March, 1881. By I. N. DANFORTH, A.M., M.D.; Professor of Pathology and Renal Diseases in the Woman's College; and of Clinical Medicine in the Chicago Medical College.

LADIES OF THE GRADUATING CLASS: You have each of you now received the degree which you have so long coveted, and for which you have toiled so long and well. For each one of you the past three years have been years of unremitting labor—and for some, perhaps all, of you—they have been years of self-denial as well.

With the rising of to-morrow's sun will come this question: "What next?"—and it is a question so vastly important in its relations to your future lives, that you cannot yet grasp its full meaning.

But it is not by any means a question which interests you alone; it is of hardly less importance to these friends who have favored us by their presence this evening, and in fact it is a question which has a practical interest for every community of our land. Regarded in its broader aspect, the question "what next?" means, not what *you* will do to-morrow or next year; not what shall be the measure of *your* success or the depth of *your* failure; not so much what shall be the outcome of *your* lives, but what shall be the future of woman in the profession of medicine; and it is your proud privilege to be ranked among those to whom the settlement of this question is committed. Without attempting to answer, or indeed to exhaustively discuss the subject this evening, I desire to lay down a few propositions, which I would have you accept as a sort of basis upon which to build your future professional lives.

And, first, I would have you go forward in full realization of the consciousness that you have a perfect *right* to study and practice medicine; that you have not entered upon a life of medical practice because the privilege so to do has been *granted* you, but

because you have an inherent and inalienable *right* to that effect. The male portion of the community has no exclusive jurisdiction over the profession of medicine, or the profession of law or of theology, hence they can grant to you no privilege to practice or to preach. The right of woman to earn her daily bread and achieve honorable fame in any and every honorable vocation, comes from God, and cannot be monopolized by man. I say it cannot be monopolized by *man.*

I am aware that the savage tribes enslave their women and make them beasts of burden, but a savage is not a man, as regards his relations to citizenship or civilization. I am also aware that here and there, in civilized countries, and, incredible as it may seem, even in our own republic, we come across an unclassified animal whom, until his place in zoölogy is definitely fixed, we are compelled to call a man, who denies that woman has any *rights* outside of rocking the cradle and mending the stockings. But these apparent exceptions to the fact which I have formulated, rather serve to strengthen than weaken my position, and in practice they benefit, rather than injure woman, in that they unify your sex, and thus vastly increase your strength, and in that they lead every true man to heartily and cheerfully recognize the fact that woman is endowed with inalienable rights, and not merely with privileges which can be granted and revoked at will. Therefore, I say to you, ladies of the graduating class, enter any community you please, and engage in the practice of your profession, because it is your *right.*

In the second place, I present this proposition for your acceptance: that your practice cannot be environed by sex or age. It is very common for us to hear something like this: That it is all very well for women to practice among their own sex and to doctor the babies, but that they can never engage in general practice. But to my mind, nothing is more certain than this: that women *must* engage in general practice, or they will not practice at all, either acceptably or permanently. It is absurd, as well as impossible, to build an impassible wall between the sexes, which is based upon any profession. If a woman practice law, she must practice *all* law; if a woman preach the Gospel, she must preach it to all; if a woman practice medicine, she must minis-

ter to the wants of *all*. The family physician must attend to all the ordinary medical wants of that family, or else there must and will be a change of doctors in that family. And this is not theory merely; experience, in a limited sense, has already demonstrated my position.

Of course, cases will arise, as cases *now arise*, in which the aid of "specialists" or those specially trained in certain departments of practice will be called, but the *fact* will remain that the family physician, be he man, or be she woman, will be the family physician still. And then we shall all wonder that we ever doubted it. Who does not remember the cynical critics who used to frown upon the woman who dared to speak in public? but at the present time women are recognized not only as acceptable, but most effective and useful public speakers.

In the next place, I would have you enter practice with the idea that your services are worth just as much as though you were men. It is a blot upon our civilization, and an offense to our sense of justice and equity, that we attach less pecuniary value to the services of women than of men. Services of all kinds should be paid for according to their real value, not according to sex of the person who happens to render them. Nevertheless, as a general rule, women are paid less than men for the same service. Female clerks, female teachers, female copyists, female telegraph operators are paid less than males in like capacity, and if you extend your range of observation, you will find the same fact true. Indeed, I have heard of one man in this city who asked for a reduction on a doctor's bill, because the doctor who rendered the service was a woman. But such moral malformations do not often arise.

Now, ladies, I would have you enter practice with the full assurance that the value of your services does not depend on your sex, but upon your skill, and remember this: that no one will be likely to value your services higher than you value them yourselves. Not that I would have you become extortioners in the slightest degree, but I would have you thoroughly imbued with a reasonable self-respect, and this is the surest warrant for the outgrowth of a wise and tender pity for suffering humanity.

Again, you must expect to assume all the responsibilities incident to the practice of medicine. Responsibility in medical practice knows no sex; it sits with equal weight upon all—and this is right. Your own clients, as well as the general public, the medical profession and the press, both secular and professional, will hold you to precisely the same accountability as they hold all other physicians. Community holds all physicians to a very strict account, and community is very sensitive on this point. I am glad that it is so. It adds dignity and honor to our profession; it ennobles our calling in the eyes of community, and thus, of course, ennobles us. And the people will soon come to regard you as physicians; not as women merely—precisely as they regard *us* as physicians—and not as men merely.

So, too, the law will hold you to the same measure of legal accountability as I am held, and for exactly the same reason. A suit for malpractice will mean the same for you as it means for me, and the judge on the bench will charge the jury that your legal liabilites are neither more nor less because you are women.

Finally, you are to take your places in the ranks of medicine as *physicians*, *not* as women; as exponents of medical science, not as the representatives of sex.

And now, ladies of the graduating class, what does the future promise? You have completed the studies required by our college; you have passed our examinations, most creditably to yourselves; you have received from us the parchment certificate, constituting you physicians, so far as it is in our power to make you such; and now what does the future promise? I answer, success. More than this, I guarantee you success. But you ask "When?" I answer, as soon as you merit it, and if you never merit success, you will, of course, never reach it.

Nevertheless, I expect, and my colleagues now here present expect, success from each one of you. Not that we expect a whole community to send for you to-morrow, or next week, or next year, but we expect you to conquer success by patient, persevering effort; we expect you to be diligent students, good thinkers and patient waiters. Every young physician has to fairly tire a community out by patient waiting. You will sometimes hear of

the wonderful success and the princely income of some pushing young physician who "rode" himself into practice by fast driving, and by other misleading exploits, such as employing someone to call him from church or some other public assembly, all of which were designed to convince the public that he was flooded with business. Such stories one almost always find pure fictions, utterly without a basis of truth. But whenever temporary success has been achieved by such dishonorable means, it has cost more than it was worth, and the ultimate result has been a legacy of unpaid bills and the well deserved reputation of being sadly deficient in common sense.

Let those who would follow in the footsteps of Mr. Bob Sawyer and Mr. Ben Allen in this particular characteristic, remember that Dickens was always conspicuously successful in the creation of his fools, and never more so than when his magic wand caused these graceless wanderers to posture before him.

The winter has come and gone; lectures are no more; the college building is closed; the lecture rooms are desolate; never again shall *we—this* class and *this* faculty—gather in the old familiar places. To-morrow you will glide away, as fast as steam can hurry you, to your respective homes, there to receive the well-earned plaudits and affectionate greetings from your friends and relatives. A few days hence, when the visits are all made and the congratulations are all in and you have rested from your winter's work, time will begin to hang heavily, the reaction will come and the stern, hard, cold question, "what next?" will be upon you, in all its inexorable reality. Do not spend one hour in doubting or hesitating; move forward to your place in the world; commence life in earnest; assume at once and gladly the grave responsibilities for which you have prepared yourselves. Show that you have confidence in yourselves; it is the first—and possibly the most important—step toward a successful professional life. Welcome the coming spring, so soon to burst upon us, with smiling faces, and hearts full of gratitude, that the world recognizes you among its youthful workers, and then go bravely and patiently to occupy and adorn your appointed place.

It only remains for me to assure you, ladies of the graduating class, that the faculty will rejoice in your future growth and will

watch your professional developments and unfoldings, with all the interest which a tender Alma Mater ought to feel in her growing daughters; and, on behalf of my colleagues, as well as myself, to pronounce the word which you have so ardently longed to hear, and yet which at this moment we all utter with sadness—Farewell.

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## ARTICLE IV.

### DEATH FROM THIRTY GRAINS OF DOVER'S POWDER.

The following case is reported by Dr. S. Bailey, of Mt. Ayr, Iowa, and occurred in the practice of a neighboring physician.

The patient was Mrs. G. W.; forty-two years old; white; born in Eastern Illinois; has lived here four years. Was a housewife; married; has had five or six children, the youngest three months old. Was a woman of strong constitution; general health good; no hereditary predisposition; never had any serious illness or injury. Habits of life regular; hygienic surroundings good. Since the birth of her youngest child, had been quite unwell; has never ceased "to flow," and has had at times very severe pains; to use the family's own words, "her pains were just the same as if she was in labor." These would occur frequently. At times she would be morose and gloomy; ordinarily she was gay and happy.

On March 31, patient complained of having a cold and cough, and could not rest. Her physician was called, and found patient about as described, and prescribed five powders, each containing five grains powdered muriate of ammonia, and ten grains Dover's powder, two of which she took Friday night. She slept most of the night, and the next morning still felt quite drowsy, but was roused by her nurse to eat some breakfast, sitting up in bed; went to sleep again, and slept till ten o'clock A. M., when her nurse roused her, and gave her another powder. The patient went to sleep soon; in fact, right away, and slept till twelve M., when her nurse again roused her. This required some effort, as she was quite sleepy and dull, but was roused sufficiently to

allow her babe to nurse. She again went to sleep, and remained so till between three and four o'clock P. M., when the family tried to rouse her and could not succeed, when another physician was called, who pronounced her narcotized from opium. The usual remedies were resorted to, such as active movement, rubbing, and strong coffee, without producing any effect whatever. At nine P. M. I was called; at that time her pulse was 118 and strong; respiration about twenty-five per minute, and stertorous; the face was livid, lips blue, and extremities cold; skin moist and cool; pupils contracted, and the eyes flexed or turned to the right the greater part of the time; also turned up. I applied a battery, and kept it up till 3:30 next morning, the 2d. During the interval from nine till twelve her condition remained unchanged, except the respiration became more hurried, increasing from twenty to fifty or sixty per minute, till she died, which took place at five o'clock A. M. the 2d of April. At 2:30 I administered a hypodermic injection of three drops of acetous tr. nux vomica. Spasmodic action of the muscles of arms and legs, the peculiar effect of nux vomica, was produced. This did not change the circulation, and did not seem to produce any general effect except to increase the already hurried respirations.

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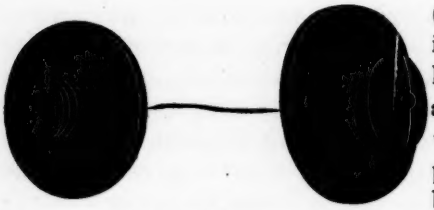
## ARTICLE V.

### DR. H. H. CLARK'S NEW SUTURE BUTTON.

The small number of appliances adapted to a great many operations, together with the wide range of utility and easy application of this button, is my excuse for calling the attention of the profession to that which supplies a long felt, yet so far unsupplied want, to wit, a simple yet reliable suture, entirely under the control of the surgeon at any and all stages of the treatment of a wound regardless of conditions. Made of vulcanite, highly polished, they are easily cleaned, antiseptic, light, compact and so strong that they are practically indestructible.

The accompanying cut represents but one of a number of forms, but embodies the principle common to all, the securing of the ends of the suture. As will be readily seen, it is a flat disk



(in other forms the disk is oval of any desired length and width) with an upright stem or shank, with a central round slot passing from center of bottom of disk to top of the stem, which is also saw slotted down to the top of the disk.

The round disks are made in five different sizes. Flax, silk or wire can be used for suture, but I prefer wire especially in large wounds.

There is also a slot at each edge of the disk opposite each end of the saw slot. These are intended for the passage of sutures, the ends of which are secured in the saw slot. The disks being one inch across, three sutures can be used with one button leaving the sutures half an inch apart, by using an oval button or a number of small round ones, any desired number of sutures can be obtained. The sutures can be entered as far away from the edges of the wound, and passed as deeply into the tissues as may be deemed necessary to secure a firm and continuous hold for an unlimited period of time. A single line of buttons immediately over the wound or a row at each side and then laced across will secure the most perfect coaptation. When placed directly over the wound, the flat surface of the button causes a very perfect approximation of integument, securing as small and as perfect a cicatrix as it is possible for art to obtain. In using them on each side, pressure may be applied and while doing so a collodion coating given immediately over the wound then cross-binders applied, and over all a simple antiseptic gauze. By this means perfect inspection of the wound is obtained with very little trouble, and the parts are so secure that they may be freely handled without danger of disturbing the most delicate adhesions.

Their use as tractors to draw together muscles divided in their transverse is readily apparent. Every practical surgeon has seen the swelling so great that the sutures have rapidly cut or ulcerated their way out, or he has been obliged to cut them in order to relieve the great tension of the parts, thereby losing their benefit at the moment when most needed, namely, when the in-

flammation subsides. His adhesive strap failing to give requisite support the newly formed delicate adhesions give way leaving a gaping wound to fill and close by granulation. All this can be avoided by using sufficient length of suture and wrapping the surplus around the stems, and using as may be indicated either slacking or tightening the suture. In amputations, by starting it one to two inches on the open surface and bringing out through the integument at from three to four inches from the cut edge of the integument, upon closing the sutures the muscular structure will be forced or rolled in over the end of the bone, closing every part so strongly that very little of any cavity is left. The sutures can be put in and the wound left open any desired time and so permit all oozing to cease and the surface to glaze and so lessen the chances of the accumulation of fluids into any unavoidable pocket. The benefits from adhesive plaster may be had by using strips with button holes in it as tractors, to connect the rows of buttons, slipping the holes over their shanks.

In case of formation of pus or the occurrence of secondary hemorrhage requiring opening up the stump, they can be loosened up, the wound washed out, or, if need be, drawn out of the way and after accomplishing the purpose of the surgeon again closed.

In cases attended with sloughing of the lips of the wound, they will, if passed in deeply and broad of the wound, still keep their hold and so save the approximation and hasten repair. In ovariotomy operations on the female perineum and in plastic surgery generally, a wide field for their use presents. I respectfully submit them to the judgment of the many honest men composing the ranks of medicine and surgery, and dedicate them to their use for the benefit of suffering humanity.

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## ARTICLE VI.

GASTRIC DYSPEPSIA. By WILLIAM HENRY, M.D., Harmon Lee Co., Ill.

Perhaps no organ or set of organs have as little said about them in medical literature, as those of the alimentary canal from the mouth to the anus.

In the past twelve years I have been called upon to treat diseases of the stomach more than any other part of the human system.

They are developed with various symptoms. One patient says, my stomach aches; again, my stomach is sour or bitter. They complain that their food does not digest, or it will not "lie on the stomach;" or it feels "like a weight in the stomach;" or, the stomach is always "bloated;" "hot wind comes from the stomach;" it "burns in the throat." "I feel something moving in my stomach," says another; "I believe there is something alive in it;" "I have such a beating in my stomach," to use an everyday expression. Says another, "my stomach feels raw, as though there were sores in it." "My stomach is cold," says another. "My stomach is constantly sick," says another, "after my meals; food distresses me so much, I am in constant misery." In this way I might enumerate the various symptoms by the way they express their feelings.

As it runs, two-thirds of the people have some trouble with the digestive apparatus. Some have constantly a bad taste in their mouth; their tongue is dry in the morning; they have a bad breath; the tongue is constantly coated; sometimes it is white, and again brown and red on the sides. I think that two-thirds of the diseases flesh is heir to come first and foremost from some derangement of the digestive apparatus.

*Causes.*—These may come from various sources. Overloading the stomach; giving it too much to do, is one cause. Not having meals at regular intervals; the drinking of too much tea and coffee; eating too fast; not well masticating the food; the use of narcotics, as tobacco; too violent exercise immediately after eating; the drinking of ice-water when one is very warm, giving a too sudden reaction; eating too many sweetmeats; the eating of ice-cream when one is very warm, producing a stasis in the circulation of the vessels of the stomach; the too free use of spirituous and malt liquors, causing congestion, thereby arresting digestion and assimilation.

*Diagnosis.*—We find as much error in diagnosis in these cases as any other; and I might say more. A case or two to illustrate my point: About one year ago, a Mrs. S., who had consulted other physicians before, came to me. She was told by them that she had uterine disease. I got the history of her symptoms. She said that she had constant distress in her stomach; so much

so that she could not rest at night. She said that she felt a faint sickness at times; the pain went through to her back. I diagnosed the case gastric dyspepsia. My treatment consisted in the use of anodynes to control the pain; I prescribed chloroform in from five to ten drop doses, to allay pain. To overcome constipation I gave her rhubarb every day for some time. For the gastric trouble I gave her charcoal and bismuth subnitrate, in doses varying from five to ten grains of the former to about the same of the latter, three times a day, before meals, combined in powder. In a short time all of the symptoms disappeared, and she pronounced herself a well woman.

Again, another error in diagnosis: a Mrs. B., whom I was called to see in consultation with another practitioner of about thirty years' experience. The woman seemed to be in a critical condition; she was lying covered with a cold perspiration; extremities cold; pulse about a hundred and forty, and to all appearances seemed to be in a dying condition from some terrible malady.

There seemed to be a tumor pulsating over the region of the stomach. My colleague pronounced it aneurism of the abdominal aorta. I could not agree with his diagnosis. I told him that I would call it gastritis with ulceration of the stomach, but as it was we could not agree. He then said that if I thought that I knew more about the case than he did, I might treat it. I gave aconite, combined with digitalis, to control the circulation. I then prescribed for her large doses of charcoal and subnitrate of bismuth, combined in powder. I gave water of slippery elm to drink, and a light diet. She was the subject of habitual constipation, for which I gave rhei tinct. combined with belladonna. I continued this treatment for some time. She improved: the pulsations ceased, the aneurism, so-called, disappeared. In about three months she was nearly a well woman, none of the symptoms again returning. I might enumerate more cases, but these, I think, are enough to illustrate my point.

# Clinical Reports.

## ARTICLE VII.

A CASE OF EPILEPTIFORM NEURALGIA. From the Records of the Clinic for Nervous Diseases, Rush Medical College, May 26, 1881. Reported by DR. EDWARD P. DAVIS.

The patient, Mr. L. S. B., æt. forty-three, resides in Scott county, Iowa, in a non-malarious and healthful region. His family history shows insanity, epilepsy and phthisis; no history of alcoholism. Patient appears well nourished, and exhibits more than ordinary intelligence. He has worked very steadily at the saddler's trade, but aside from his nervous diseases, he has had no serious illness. When twenty-one years old, he fell overcome when exposed to the sun. Three months afterward he had convulsions, which occurred at daytime once in two weeks or once a month for thirteen years. These were doubtless epileptiform. He then removed to a more quiet locality, and by exemption from excitement and the use of remedies, his epileptic fits gradually ceased, but the present neuralgia supervened about a year after the cessation of his fits. He has had but one or two convulsions since the neuralgia began. His first neuralgic pain was felt in the first molar of the right upper jaw; this pain returned every five minutes, and did not yield to quinine. The pain grew worse, extending around the face and into the eye; at first coming on only in winter, then in both winter and summer. At present the pain is paroxysmal; the face twitches about the lips; a burning sensation is felt, and great pain over the second division of the fifth nerve. The patient remains conscious, and presses with one hand on the occiput, while with a handkerchief in the other hand he rubs the right side of the face. This rubbing is

the result of experiment, while the occipital pressure is involuntary. Pupils are equal; the cornea clear; the conjunctivæ reddened. Pain often radiates over all the branches of the fifth pair; the malar bone is yielding to the patient's pressure. Sight is normal; the tongue is protruded well; smell is normal, but an annoying discharge of mucus persists from the right nostril. Taste, hearing and sensation are normal. Pressure over the supra-orbital foramen elicits slight pain. Pressure over the remaining foramina of exit of the fifth pair gives no pain, but a paroxysm may be elicited by pressure near the zygoma. The pain does not vary in intensity by day or night. Perspiration on the facial region is normal; a feeling of heat is present in the affected side. The patient has exhausted opium, gelsemium, quinine, iron; a combination of chloral hydrate and opium affords partial relief. In the failure of medication, an operation is advised, and on May 28, 1881, Dr. C. T. Parkes proceeded as follows:

Under antiseptic precautions, a curved incision was made over the malar bone, an entrance effected into the antrum of Highmore by a trephine; the rear wall of the antrum was perforated, the floor of the orbit was entered from the spheno-palatine fossa, where the infra-orbital nerve was reached, and followed to the foramen rotundum, where the second division of the fifth was found. An effort was made to stretch the nerve, when it broke, and the contents of the spheno-palatine fossa were removed, including Meckel's ganglion. The second division of the fifth was cut off at the foramen rotundum, and an anterior section was also made, which removed one and one-half inches in all. During the first night hæmorrhage from the nose and mouth occurred, but was not serious. Patient had pain radiating through the remainder of the fifth pair during the second day; twitching of the facial muscles also persisted a few days, but aside from these brief sufferings, and slight soreness about the wound, he described his relief as perfect. The wound healed by first intention, and in six days after the operation the patient went to his home.

Through correspondence, it was learned that his relief persisted until late in the past winter, when the pain recurred in the inferior dental nerve and about the eye. He was advised to visit the

city again, and presented himself for examination. An operation upon the inferior dental was recommended, and Prof. Gunn, at the surgical clinic, April 22, trephined through the ramus of the lower jaw, raised the nerve, and excised a quarter of an inch of its extent. The patient made a fair recovery from the operation, but was annoyed by very severe pains for about three weeks. Hypodermic injections of morphia and atropia relieved this pain, and as the wound healed he found relief without further medication. He is now free from pain, but notes uneasy sensations attendant upon cold and damp weather.

The peculiar origin and distribution of the trigeminus, its resemblance to a spinal nerve in the possession of a ganglion upon its posterior root, and its liability to disease, have rendered it an object of great interest to students in all departments of medicine. Recalling its origin, we find it to be from the outer portion of the floor of the fourth ventricle and from the continuation of the posterior horns of gray matter of the cord known as the tubercle of Rolando; the fibers of origin of the motor trunk are traced to the olivary bodies, to an origin common with fibers of the facial. Its sensory distribution will be remembered as embracing the face and fore part of the head, the eye, nose, ear and mouth. Without attempting to discuss the part played by the chorda tympani in the nerve supply of the anterior portion of the tongue, we may assign its innervation to the fifth pair (Quain). The motor distribution of the nerve in question is principally to the muscles of mastication.

In function, the fifth resembles a spinal nerve in the conveyance of both sensory and motor impulses. Its trophic fibers take origin in the Gasserian ganglion, and their function has been strikingly illustrated by the experiments of Samuels, Meissner and Schiff. Cases of disease of the fifth pair, and autopsies revealing alteration of the structure of the ganglion, furnish corroborative evidence of its trophic function. We have reason to believe that the fifth possesses recurrent fibers from clinical observation, the phenomena of the painful points of Varleix being of common occurrence. In view of the extensive distribution of this nerve upon a cutaneous surface exposed without protection to sudden changes of temperature, and its connection with the teeth, so

liable to disease, trifacial neuralgia is but a natural sequence of any predisposing malnutrition, inherited or acquired. Thus, Romberg states that it occurs only in advanced life, when the balance of waste and supply is in favor of the former. While the pathology of neuralgia presents much obscurity, we may adduce certain considerations which afford a reasonable, if not a proven explanation.

Healthy nervous action may be regarded as regularity of isomeric activity in the nerve trunk or ganglion in question, constituting the so-called normal tonic influence of the nervous system, this being independent of volition or peripheral impact. A natural analogy would be the condition of magnetism in any body. Any disturbance of molecular equilibrium will result in the interruption of this activity. Such continued disturbance we are accustomed to designate mal-nutrition. Long continued irregularities of nervous force lead to excessive or perverted activities, and the sensation of pain results. In the case described, this was carried to the extreme; the patient's paroxysms came on at varying intervals, but with great suddenness and severity. His natural impulse was to press with all his force over the affected nerves, and this pressure was the result of experiment, and was his only means of mitigating his sufferings, pressure evidently checking the activities of his nerves, as impact checks the vibrations of a sonorous body. Examination of excised neuralgic nerves gives varying results. Lesions found are those of altered nutrition.

The treatment of epileptiform neuralgia has embraced the full extent of anodyne medication, and has included surgical procedure as a last resort. Trousseau has used large doses of opium, finding great tolerance of the drug; while he does not claim to have cured a case, he has relieved many.

Bastian (*British Medical Journal*, June, 1879) cured a case of reflex epileptiform neuralgia by large doses of opium, twenty-five grs. per diem, diminishing the dose without the patient's knowledge. Remack reports a cure of tic doloreux by electricity, while Meyer accomplished this result by the same agent, making especial applications to the cervical sympathetic. Beard and Rockwell report failure after a brief trial in one case, while in

case of a man æt. sixty, temperate and of fine physique, eighteen applications of Faradaic electricity cured, the whole duration of the disease being two years. Three cases of severe trifacial neuralgia, not epileptiform, were improved, but not cured, by applications of Faradaic electricity. Hamilton cites a case where clonic spasms existed, the eyes being injected, flow of saliva excessive, gums tender, and points painful on pressure, where no relief was obtained except by large doses of alcohol. Nerve-stretching and resection have been brought forward as perhaps the only directly relieving agents known in these cases, and with results somewhat as follows: For the various neuralgiæ Wagner cites 135 cases, whose results show nine failures; six deaths; thirty-two relapses after several months; twenty relapses up to three years from operation; eighteen cases with no relapses for several months; twenty-three with no relapses after several years; twenty-six cases history after operation unknown. In "Select Topics of Modern Surgery," by Drs. Fenger and Lee, of Chicago, twelve cases are cited wherein stretching of the fifth pair resulted in nine recoveries; one failure; one partial relief; one relapse. An operation upon the infra-orbital nerve for neuralgia of the orbital branches of the fifth pair, by Dr. Bogue, of Chicago, resulted in six months relief, and a severe relapse. Nussbaum and Patonbau advocate the ligation of the carotid artery for general neuralgiæ of the fifth pair, while neurotomy is commended in localized affections; it has been observed that section of the inferior dental nerve is peculiarly successful when union does not occur.

The recent experiments of M. Weit (*Progrès Médicalè*, March 4, 1882) demonstrate the influence of nerve-stretching upon the centers themselves, tension of the pneumogastric having produced an injection of the medulla visible to the unaided eye. It will have been observed in the case described, that points painful upon pressure were not as abundant as in many cases. The absence of this irritation of the recurrent nerves would indicate a neuralgia of central origin; a point which the preceding epilepsy of the patient proves correct.

# Foreign Correspondence.

## ARTICLE VIII.

VIENNA, JUNE 3, 1882.

EDITORS MEDICAL JOURNAL AND EXAMINER:

The iodoform strife seems to have subsided; an occasional grumble is still heard—Czerny of Heidelberg being the latest to put in a mild protest against the general substitution of iodoform for carbolic acid in surgical dressings. The discussion will have one eminently beneficial result—not by any means the exclusion of the agent from a very prominent place in the surgeon's armament, but simply the inculcation of proper caution in its use. That iodoform is not perfectly innocuous, as was at first supposed, is now evident; but neither is carbolic acid; and the valuable properties of the one are as unquestionable as those of the other. At any rate the Vienna surgeons, from Billroth down, are calmly using iodoform as the general dressing, and show no disposition to "weaken" under the furious onslaughts of Kocher *et al.* One fact, however, seems to be generally admitted, that iodoform does not afford the same protection against erysipelas as carbolic acid; hence surgeons may be compelled to resort temporarily at least to the acid, especially in hospital practice.

Koch's tubercle bacilli are the object of general attention at present; they are unquestionably to be seen in every case of tuberculosis—if one has a homogeneous (oil) immersion lens, considerable experience in histological manipulation, and patience. Several methods have been already devised for bringing their detection in sputum within the reach of the practitioner, with the hope that the microscope may afford a definite diagnosis long before the physical changes are such as can be detected by the stethoscope. Ehrlich, Frerich's assistant in Berlin, has devised a plan

by which he says the bacilli can be seen through a good water immersion lens giving an amplification of 5-600 diameters. I have not yet used Ehrlich's methed, but I know by experience that Koch's is too exacting to possess much value for clinical purposes. Moreover it remains to be seen whether the bacilli can be detected in sputum with sufficient certainty to establish a diagnosis, before the usual symptoms and signs are present.

Neisser, in Breslau, who in 1879 published the discovery of a micrococcus which was to be found in every case of specific blenorrhœa either of urethra or of eye, but nowhere else, has recently recorded his conviction that this "gonococcus," as he christens it, is the specific agent in producing the disease; and quotes Aufrecht, Ehrlich and Gaffkey, the ophthalmologists Leber, Sattler and Hirschberg in support of his statements. But until recently the *experimentum crucis*—successful inoculation of the micrococci—had never been performed from the simple fact that animals are not susceptible to the gonorrhœal contagion, and human subjects have always preferred to acquire theirs in another way. Recently, however, Bokai, in Pesth, was so fortunate as to find six philanthropic students who placed their urethras at the disposal of science. With the "gonococci" which Bokai had cultivated artificially from gonorrhœal discharge, the six were inoculated; and three had the satisfaction of exhibiting a week later a classical gonorrhœa. For one somewhat familiar with the natural history of medical students, the experiment would have been far more convincing if the dauntless three had been kept in solitary confinement for a week before and after the inoculation. That these organisms are present in specific urethritis and conjunctivtis, and that they are not to be seen in pus from other sources, I have myself observed in numerous cases; but however great the probability as to the relation of cause and effect may be, the proof, as Neisser himself admits, is still lacking.

Still another bacterial disease has been the subject of recent experiment—this time on a large scale. Pasteur's assertion that animals can be protected by vaccination against splenic fever, which in Europe destroys immense numbers of cattle, has been recently subjected to a practical test by the Prussian government. Your readers may remember that a similar experiment was made

last fall by the Hungarian government, which placed at Pasteur's disposal several hundred sheep and cattle, half of which were vaccinated by Pasteur's assistant Thuillier, while the other half were left unprotected. About thirty days later all were inoculated with splenic fever bacillus which had been cultivated in Paris by Pasteur. The results were not entirely satisfactory: (1) Because several animals succumbed to the protective vaccination: (2) Because several others of the vaccinated died of intercurrent diseases during the vaccination period, while the non-vaccinated animals remained without exception healthy until finally inoculated. The government committee concluded from this fact that in consequence of the vaccination the ability of the animal to combat pathological influences was materially diminished: (3) Because several vaccinated animals yielded as rapidly to the poison as the unvaccinated. At the close, 14.5 per cent. of the vaccinated and 94 per cent. of the unvaccinated animals were dead. The committee reported advising, not simply that the government withhold its official sanction, but even that the vaccination by private individuals should be absolutely forbidden.

The results recently attained in Prussia are decidedly more favorable. With material cultivated in Paris, six cows and twenty five sheep were vaccinated by Pasteur's assistant, April 5th, and again Apr. 19—an equal number of animals being reserved for comparison. Three sheep died of splenic fever after the second vaccination; several others had slight fever. On May 6th all (twelve cows, forty seven sheep) were subcutaneously inoculated with the blood of a sheep which had died of splenic fever thirty hours previously—each sheep receiving one, each cow two and a half decigrammes of the blood. Three days later twenty-four sheep and three cows (all unvaccinated) were dead, the others sick; while all the vaccinated animals were perfectly well. Examination of several of the dead animals (by Virchow among others) proved the presence of the characteristic bacilli in the blood.

Pasteur ascribes the death of the three sheep after vaccination to a peculiarity of race and promises to send a "vaccin adapté" for such cases.

The decision of the government in the matter has not yet been made public.

W. T. BELFIELD.

# Domestic Correspondence.

## ARTICLE IX.

NEW YORK, June 19, 1882.

*Editors* CHICAGO MEDICAL JOURNAL AND EXAMINER:

Our societies have held their last meetings for the season, and many physicians are beginning to start on their summer pilgrimage. A large number go to neighboring seaside or country resorts. A custom is springing up of sending a card to the profession in the city, notifying the brethren that such a one will be at such a place and hotel for the summer months. Dr. A., for example, will be at Ocean Hotel, Long Beach, during July and August. This is a practice which has long been adopted in a measure by German physicians. There can certainly be no objection to it. If a physician acts openly and straightforwardly, it is a poor code of ethics which he will transgress. One of the evils of the classic precepts of the old code was that it led to so many sneaking and evasive acts. This was strikingly shown in that satire, also classic, known as the "Experiences of a Successful Practitioner."

The past winter records the formation of two new societies. One of them, the Materia Medica Society, has been already referred to. The last one is known as the Practitioners' Society of New York. It is limited in number, but contains many prominent men. The president is Prof. William M. Polk. Other members are Dr. G. F. Shrady, Dr. R. F. Weir, Drs. Sexton, Hunter, Ward, and others.

At the last two meetings the subject of the removal of nasopharyngeal tumors was discussed, Drs. Weir and Shrady each reporting a case. The points gained in the experience of these

operators were valuable. One was that preliminary tracheotomy is the safest measure, even if the tumor is small. In Dr. Shrady's case the tumor was very large, and the hæmorrhage terrific. It was thought by Dr. Shrady that ligature of the external carotid would be a wise preliminary measure in future cases. Dr. Weir was inclined to think that in many cases hæmorrhage could be controlled by dividing the operation into two stages: First, that of exposing the tumor, then, after a few days, of removing it.

Dr. Hunter read a very practical paper upon vaginal and uterine discharges. In leucorrhœa from vaginitis he considered very hot water, as a rule, the best remedial agent. He deprecated the use of astringents as often keeping up the discharge. In leucorrhœa from cervicitis, injections were almost useless. Local applications must be made. Of these he preferred pure carbolic acid. The discussion drifted off to the subject of leucorrhœa in children. The fact was brought out that a urethritis in young boys and possibly leucorrhœa in girls might be due to a uric acid diathesis.

At the last meeting of the Academy of Medicine, Dr. F. D. Lente described a "New Form of Knee-joint Disease." It is quite doubtful whether it merits such a title. The disease follows slight injuries or wrenching of the knee. The patient suffers great pain at times, and walks with difficulty. There is tenderness, especially on the inner side of the knee, but no redness or swelling. It is not a hysterical joint. A number of cases were cited, and the speaker asserted that it was from this trouble that Prince Leopold recently suffered, thereby delaying his marriage. Dr. Lente did not venture to give the pathology. It seemed evident, however, that he described a trouble due to a sub-acute or chronic inflammation of some of the internal structures of the joint, probably the internal semi-lunar cartilage. The condition has been observed by others. The treatment is rest, with a splint. This brings about a cure in a short time.

Dr. Knight, surgeon in charge of the Hospital for Ruptured and Crippled, read a paper the same evening on "Static Electricity." He was very enthusiastic over the results obtained by it, especially in joint troubles. Dr. A. D. Rockwell thought it

an excellent supplement to other forms of electricity. He referred to its tonic effects, and believed that when a patient was insolated and charged the electricity was diffused through the body. Dr. C. L. Dana had seen its tonic effects. He had had some speeially good results in local applications over the liver which had led him to inquire into its penetrating power. He believed that it was entirely superficial, and did not diffuse or penetrate except when sparks are drawn. Its effects, therefore, must be largely produced reflexly.

Dr. W. G. Morton said that he had found static electricity to be most powerful in all kinds of hysterical conditions, spinal irritation, etc.; next in rheumatic and painful joints, then in neuralgias, etc.

There has been considerable discussion here over Koch's alleged discovery of a bacillus tuberculosis. We want very much to have some sent over to us as has been done in England. I hear that an exhibition of them was given by some microscopical (not pathological) expert a short time ago. I have yet to meet anyone who puts faith in Koch's conclusions, though it seems impossible to deny the fact that he has found an organism. I have attempted at Satterthwaite's laboratory to demonstrate the bacillus. We had some beautiful specimens of tubercle. They were treated with methyl-blue and vesuvin, as described by Koch. No one at the laboratory, however, was able to distinguish them. We used a lower power (1-6) than is recommended by Koch. There are a number of obstacles which make it difficult to follow the Germans in their frequent epoch-making discoveries. It is generally found, for one thing, that they have been employing some new and unheard of dye which other people have to send long distances for, and then may not get it. By the time the rest of the profession is able to follow carefully the announced line of investigation, the original discoverer has achieved a reputation and perhaps got an official appointment. No better illustration can be found of the way in which a German pathologist can cover his tracks than in Erlich's recently announced method of showing bacilli tuberculosis. This remarkable man has a preciously new substance which he calls "anilin oil," in which, and in various other mixtures he baptizes the micrococci until they

are inflated to nearly twice the size modestly given by Koch. The discovery of patriogenic bacteria is getting reduced to a fine art in Germany. It is a pity we cannot find some here.

It is a peculiar fact that the pursuits of neurology and jurisprudence should so inevitably develop personal differences. It took the Medico-Legal Society three months to elect its present officers, and now a war-cloud still hangs over it. The president, Mr. Bell, works for it with great energy, but he is said to be too autocratic for an ideal officer. At its last meeting the subject of Guiteau was introduced and discussed. The occasion was the petitition to President Arthur for a stay of proceedings, in order to allow Guiteau to be examined by a commission of experts. This petition has been extensively circulated, but not, I imagine, extensively signed. There was not a unanimity in the society as to whether Guiteau is insane. But it was voted that the society make no official announcement of its views.

The last two meetings of the Neurological Society have not been exhibitions of brotherly love. At the May meeting for election of officers, the two candidates previously nominated, withdrew in favor of Dr. Spitzka, who had not been previously nominated. Dr. Spitzka was elected after the second ballot. At the June meeting, a protest was presented signed by thirty-five members, against the way in which the president's election was secured. I do not understand exactly wherein the enormity lay, but the protest was put on the minutes after some warm interchange of views. Doubtless the matter will drop now, being sufficiently small to drop with no great noise. It has been suggested that it would be well to embody a certain well-known dramatic poem as part of the by-laws in all medical societies. This poem is known as "the Society Upon the Stanislow," and its spirit may be gathered from the following verse:

> "Now I hold it is not decent for a scientific gent,
> To say another is an ass—at least to all intent;
> Nor should the individual who happens to be meant,
> Reply by heaving rocks at him to any great extent."

The resignation of most of the clinical professors in the University Medical School took place some time ago. It is undoubtedly a loss to the school, and one not easily made good, since most of the gentlemen occupied the first position in the special-

ties they taught. There is, however, no particularly bad feeling about it. The rumor is that we are to have a Post-Graduate School. There were some attempts to organize a new medical school in connection with Cornell University. It is doubtful if this succeeds, as Cornell is not in the happiest state, financially or otherwise, just now. If it were possible to organize a post-graduate course which would secure and utilize the vast amount of clinical material here it would surely succeed. For a very large number of medical men come here every year to "brush up." This they do at present in a haphazard way, which is unsatisfactory and unprofitable.

We have had a "First Aid to the Injured Society" at work here for some time. It aims to teach men and women certain essentials in anatomy and physiology, and also what to do in case of injury, accidents, drowning, fracture, etc. The course consists of five lessons. It has been rather the mode to attend them the past winter, and a number of full classes have been diligently lectured to. The majority of the pupils are women, and a good many of them young ladies. There is a little book furnished for guidance. This book is rather better than the course. If the fever for elementary physiology and nursing should attack Chicago, I would advise you to meet it conservatively. The amount of knowledge which can be made practically useful in five lessons is not great. Few certainly can attain the quickness of thought and readiness of action which characterized *Punch's* medical student.

"What would you do, sir," asks *Punch*, "if you were called to see a man who had hung himself?"

"I would cut him down."

"Then what would you do?"

"I would cut him up."

I see by the German journals that similar societies, known as Samaritan Societies, have been organized in Berlin and other places. They have not met with unanimous favor there.

We are still having plenty of contagious diseases in New York. Typhus fever appeared here last February, and it does not disappear. Ten or fifteen cases are reported every week. Small-pox is a little more prevalent than typhus. We have some twenty

new cases a week. I saw the report of the death by small-pox of a Boston actress not long ago. She had been opposed to vaccination. Such little memorials to Jenner's greatness are being furnished quite regularly. I saw a *mot* on the subject, which is too good to be kept in Paris—though it cannot be translated:

"Vérole et Variole," is the title; "Mlle. Duchand, de l' opera, etant morte de la petite vérole: 'C' est bien modeste,' dit Fontenelle."

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## ARTICLE X.

ELGIN, ILL., FEB. 10, 1882.

EDITORS MEDICAL JOURNAL AND EXAMINER:

In as brief a manner as possible, I will relate to you two railroad accidents occurring under my observation and treatment while in Indianola, Texas. It must be observed that in my surgical operations while there I had to depend on but little help, as help was not to be had. The first of these two cases was a Mr. J., twenty-one years of age, who, while in the act of coupling the cars together, met with the accident of having his right arm badly broken and lacerated, also one of his feet was injured, requiring the amputation of one toe. Three days after the accident his arm began rapidly to mortify, requiring amputation at the shoulder without further delay. I only had the assistance of a timid doctor, who begged me not to undertake the job, the patient begging me to save his life if possible. I chloroformed him and amputated at the shoulder joint, and saved his life. This accident occurred in December, 1878.

In the winter of 1879, on Christmas day, J. R., roadmaster, thirty years of age, while on his way to Victoria with the train, stopping at the first station, twelve miles out from Indianola, while in the act of stepping on the train as it was about to start, made a misstep, and one of the wheels passed over his foot, mashing and lacerating it badly. As the train was on its way to Victoria, he was taken on there, and I was at once telegraphed

to come up, distance fifty miles; a special car took me up. I found his injury such that I was sure an amputation was necessary, but the matter was delayed two days, and I then fixed up a swing bed on one of the cars and took him to Indianola, and the next day telegraphed to Dr. Sutherland, of Victoria, to come down and assist me in amputating his leg. Mortification had commenced, spreading over the foot, and was extending up the leg. The patient was made ready and Dr. S. administered the chloroform, and I at once amputated just below the knee. I noticed the cut muscles were quite dark-colored, and I feared a second amputation above the knee would be necessary, but I succeeded in healing up the stump, making a good one, but not by the first intention. I afterward took measurement of the stump, and sent to New York and succeeded in getting him a good fit of an artificial limb.

H. ROZENCRANS, M.D.

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## ARTICLE XI.

TAMA CITY, Iowa, July 7, 1882.

EDITORS CHICAGO MEDICAL JOURNAL AND EXAMINER:

The following case, I think, will be interesting to the profession:

June 15, Mrs. B., æt. 28, called at my office and requested my aid in producing an abortion. I refused, and tried to dissuade her from such a course. She stated that she was "two months along, and if I would not assist her she would do it herself." June 19th a messenger called and stated Mrs. B. was dying.

When I arrived I found the lady in a terrible convulsion—her face fearfully swollen and black; eyes deeply injected and partly open, with the pupils widely and symmetrically dilated. The blood was flowing from her nose and mouth; fingers livid; and each muscle seemed to vie with another in producing the most horrible distortions of face, trunk and extremities. The pulse was rapid, 120, but firm; the surface moist and cool, and she wholly unconscious.

I administered chloroform (Squibbs') and she immediately passed into a semi-conscious state, shortly becoming quite communicative.

She remained in this condition about two hours, when she passed into another convulsion, in which she appeared about as before.

I applied the same means of treatment as before, and soon she was comparatively calm. Noticing the peculiar odor of the eructations, it brought to mind her call at the office. Believing that she had taken some of the many popular remedies to produce abortion, I gave her a hypodermic injection of apomorphia 1-12 grs., which soon produced copious emesis. From the vomited matter I easily obtained the peculiar odor of *oil of tansy*. She admitted taking "over a teaspoonful" of the oil.

Upon examination, I ascertained that she was flowing slightly, and just after I called (two hours later) she passed a two months' fœtus from the vagina. Copious injections of hot water and two drachms of Squibbs' ergot soon checked the flowing, and under the liberal use of stimulants and tonics she has made a rapid recovery.

I call attention to this case as it is the second I have treated here within three weeks, and she states that it is frequently used by the ladies of her acquaintance, she having known of several deaths from its use. Is there no way of preventing the sale of such dangerous drugs to the laity when it is well-known for what purpose they are purchased? F. W. GODING, M.D.

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It is announced that the French Minister of Marine has placed at the disposition of M. Alphonse Milne Edwards the vessel *Le Travailleur*, for a dredging expedition in the Bay of Biscay, as far as the Canary Islands. The operations, which are to be made with a view to studying the fauna and flora in deep sea, will take place in July and August next.—*British Medical Journal.*

# Society Reports.

## ARTICLE XII.

### CHICAGO MEDICAL SOCIETY.

Stated Meeting, July 3, 1882. Dr. J. H. Hollister, President, in the chair.

After reading of the minutes of the last meeting by Dr. Liston H. Montgomery, a motion was passed that hereafter honorary members of this society who desired becoming active members, would be so regarded, provided they were resident physicians and paid the annual dues.

Discussion on the causes of, and treatment for preventing the mortality in children, from serous diarrhœa and cholera infantum.

Dr. Fenn opened the discussion, which had been postponed at the last meeting, at which Dr. N. S. Davis had read a paper on this important subject. Dr. Fenn believed that there was no special noxious agent causing this disease; that, in his opinion, the same influences that affected adults affected children likewise. Everybody knew that heat was a great stimulant, which, unduly increased, was destructive in its effects. The susceptibilities of children were greater than those of adults, and under the steady influence of heat their vitality grew less. There were many trivial causes of diarrhœa in children. In our northern latitude, the labors of the day enable adults to rest well in the night, but children were often restless and could not sleep. Sometimes they lay uncovered, and while their side next to the bed was sweating, the one exposed to the air was chilled, and thus the taking of cold was a frequent cause of diarrhœa. Another cause was the constant hugging of children by their mothers. They were kept as if wrapped in a poultice; yet, the exhalations from adult bodies

were deleterious to infants. There was a necessity on the part of parents to change their children's clothes frequently, and bathe them in cold water. Fresh air, good food and pure water were indispensable in the treatment of the disease under consideration. Sometimes abstinence from all food except milk and lime-water was necessary. But he deprecated the use of powerful or debilitating medicines.

Dr. D. M. Tucker used calomel and soda in gastro-enteritis, with bismuth and syr. rhubarb whenever indicated. He advised removal of the child and mother to the country when practicable, for the city was a too fertile soil for the disease to feed on. He would give children no solid food until they had teeth to masticate it. The mother should nurse the infant by all means. Warm applications, 70 F., should be made to the abdomen, and if there was a catarrhal affection of the lungs, a frequent concomitant, that should be attended to.

Dr. Paoli said that catarrhal gastro-enteritis and cholera infantum were fatal diseases in all the great cities; that remedies would fail in spite of all ability on the part of physicians, even after the best hygienic precautions had been taken. But many physicians called cholera infantum a mere congestion of the bowels, and got the credit of a speedy cure. As to treatment, we had to individualize it and adapt it to the case as might be. There were gastritis, colitis and enteritis, each of which might assume various forms. There were the poor, who lived in the midst of hurtful surroundings, which could not be ameliorated, and where the mothers gave indigestible food to their children, in spite of the physician's advice. Then grave complications, as dysentery, sometimes set in. As a valuable remedy, he recommended small doses of nitrate of silver, 1–20 gr. every three hours.

Dr. S. Strausser said that a most frequent cause of the diarrhœa of children among German populations was prolonged lactation. In his opinion, a child eight months old should be weaned if there was a tendency to diarrhœa, and lactation should never be prolonged after the twelfth month. He had met several cases in which the cause of the disease was phymosis, and circumcision cured them. In all these cases, the closest attention

should be given to the diet. He enjoined perfect rest; abstinence from food in many cases; a flaxseed poultice with a little mustard in it, to be applied to the belly, and a warm bath, in some cases. He gave bismuth subnitrate with the chalk mixture, and paregoric if indicated. In vomiting, he gave aromatic spirits of ammonium. He believed that under the treatment which he had just indicated the mortality would be reduced one-half. Infant food was worse than starvation. Milk with lime-water, and a few drops of whisky in ice-water, were good drinks in such cases.

In gastro-enteritis, Dr. J. H. Bates believed that the first symptoms were those of irritation of the nervous system, be the cause what it may, heat or indigestion. In such cases, care should be taken, when giving cows' milk, that it came from healthy cows. It was advisable to clothe the children in wool. Some cases of diarrhœa were malarial, recurred in periodical aggravations, and were best treated with quinine, a remedy which sometimes produced its effect on the infant through the milk, if administered to the nurse. But he did not believe in the efficiency of any medicine in particular.

Dr. Earle said that cholera infantum was the rarest of diseases. Although he met a great many cases of diseases of children, he seldom came across a case in the space of a year; but simple diarrhœa, entero-colitis and dysentery were quite common. The two first of these were often the result of bad diet. One of the remedies he prescribed the most was phosphate of sodium. He gave as much as would hold on a three cent piece at a dose. This was the salt found in human milk; in which it differed from that of any other animal. He did not advise weaning a child sick with diarrhœa. If extra food was required, he gave rice-water, with just enough cream to make it nutrient, and seasoned with sugar and salt. He withdrew milk in cases in which he found that it caused the disease, and did the same in regard to other diets, as the case might be. We had sometimes to avail ourselves of artificial foods. He had observed that comdensed milk was given in too small quantities. Children were starved on it. Some children never could satiate their appetite, and had never been allowed a good square meal. He gave one teaspoonful of condensed milk, with seven of rice-water, at a time.

For twenty-five years, Dr. J. H. Hollister had given the subject a good deal of thought. He believed that an atmospheric temperature of at least 70° F., continued for a few days, was required for that form of the disease known as summer complaint to settle in the community. He explained the occurrence thus: A prolonged high temperature caused paresis of the nervous ganglia, and through the action of the vaso-motor nerves, the vessels of the secretory organs were relaxed. Functional derangement of the liver arose, and chills took place. A serous discharge from the bowels was the inevitable result of congestion.

As to treatment, the temperature should be brought down, in acute cases, by cooling and bathing. He believed that calomel was a nervous stimulant, as the salts of zinc; that it acted on the ganglia of the nervous system, and relieved the congestion of the bowels. For twenty years he had relied on it in such cases. In diarrhœas, after inflammation had set in, the most favorable stage was passed, and these cases were often looked upon by mothers as results from dentition which should not be interfered with. In his practice, the doctor often tested the discharges with litmus paper, and then administered alkalies, if they were acid. He had used calomel, in the dose of $\frac{1}{4}$ to $\frac{1}{8}$ of a grain, as a nerve-stimulant, with good results. When there was excessive irritability of the mucous membrane, he gave the camphorated tr. of opium one to five drops; also the chalk mixture.

℞ Tr. opii camphor,
Mist. cretæ,
Sacchari. } .....āā ℥i.
Aquæ.....ad ℥ij.

M. Sig. teaspoonful every three hours for a child more than a year old.

He had been very well satisfied with this *positive* treatment, and had lost few cases. The most harmful circumstance was that mothers erroneously believed that teething diarrhœa should not be checked. In extreme prostration he gave a few drops of brandy.

Dr. Lester Curtis, after experimenting, had come to regard calomel as an efficient remedy in much smaller doses than usually

given. He divided ⅛ gr. of the remedy into twelve powders with sugar, and gave it every three hours. He had obtained beneficial results from as low as one-sixtieth of a grain.

The society adjourned.

PATHOLOGICAL SOCIETY.

At the meeting of the Pathological Society held June 26, after Dr. Lydston's paper on the treatment of erysipelas, an animated discussion followed. Dr. E. W. Lee recommended the use of alcoholics internally, and carbolic acid locally. In the cutaneous form, he gave one part of it to twenty of a mixture of gum tragacanth, acacia and molasses. He also recommended the local use of steamed compresses. Dr. Odelia Blinn recommended the external use of chloroform in rebellious cases.

Dr. D. R. Brower had obtained very beneficial results from the use of belladonna internally. It was established by Ringer and by Bartholow, and deserved a better trial than it had received yet.

H. D. V.

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As a profession, doctors think it undignified to have much to do with politics. As a whole, they are not as big tax-payers as they ought to be, but numerically strong, intelligent and influential. Unfortunately, other of the better elements of society hold themselves aloof from mingling in what they term the filthy pool of politics. This condition ought not to be, if we want to break down bossism and machine politics, to defeat vicious and secure good legislation. 'Twould be a misfortune for all doctors to think alike, but if each will follow his convictions into the ranks of that politcal party nearest his liking, then exert his influence toward sending intelligent, representatative men to the legislature, we may secure the enactment of such laws as will protect the people, and convince them that we have been impelled by motives other than a desire to attain selfish ends.—*Dr. Crumpton*, in *Pacific Med. and Surg. Journal.*

# Original Translations.

DEMOKEDES, OF KROTON.—(*Archiv für Gerschichte der Medicin.*)

At Knidos there lived an Æsculapian priest, with the name Kalliphon, who was very well educated in the art of medicine. To him was born a son, and he called him Demokedes. When the youth was growing in limbs the father tried to cultivate his brain, and taught him, beside classic matters, the highly esteemed art of medicine. When his son was grown up they removed to Kroton, as the river was named, and practiced their profession. But they could not agree, the father being a rather passionate man, but the son a very gentle youth. Therefore, Demokedes migrated to Ægina, where he surpassed even in the first year all his old colleagues. At this time (about 500 B. C.,) a physician had to do not only general practice, but had also to mix his medicaments, sew his bandages, and to manufacture all his instruments. Young Demokedes, notwithstanding that he had no appliances whatever, excelled by his practical ways in so marvelous a manner that he was appointed after the first year as city physician, with $1600 salary, the first appointment ever made of this kind.

After being three years at Ægina, his fame was so widespread that he was called as city physician to Athens, with a salary of $2600, but after a little while the famous Prince of Samos, Polycrates, made him a court physician, with $3200. Here he lived in a princely style as the highly esteemed friend of the Prince of Samos. But life is changeable. Orœtas, Persian Governor of Sardis, was a mortal enemy to Polycrates from unknown causes, and in a deceitful manner he invited the Prince

Polycrates to visit him, with all his court followers, at Magnesia, where the unlucky prince was captured and killed. Our Demokedes, who had accompanied the prince, was sent as a slave to Darius, King of Persia (485 B. C.). Here the unhappy Demokedes lay among other slaves, clad in rags, with chained hands and feet for a long time, but a happy accident raised him again to the highest honors. Darius, the mighty king, jumped one day from his haughty stallion (or was thrown off), and got a luxation of his ankle-joint. The Arabian physicians of the court were unable to reduce the luxation, and inflammation set in. When the king lay in great agony, and his physicians were unable to do anything, somebody told him of Demokedes. Clad in his rags the latter was brought before the king, and asked if he were a physician. "No;" said our Demokedes, who was afraid that he would never again see the borders of happy Hellas, but when he was threatened with torture he agreed to help the king. And so he did. The king, after being restored to full health, presented two chains of pure gold to Demokedes, which the latter refused, asking the king if he would chain him forever. Then the king sent him to the dames of his seraglio, and they filled a large bucket full with gold, so that the servant of Demokedes, who picked up the overflowing gold pieces, made quite a large fortune. He was then elected court physician, and lived again in a princely style as the most esteemed friend of the mighty King Darius. But he always longed to see his happy Hellas again.

Among his patients was Atossa, daughter of the King Cyrus, II, and wife of Darius. She had got a small sore on her breast, which she kept secret in false bashfulness as long as possible, until it developed to a regular mastitis. Then she called Demokedes, and he promised to cure her if she would do what he asked from her for his benefit and not to her own danger. So she said to Darius: "O mighty king, you are such a strong and powerful young man, and you have so many soldiers who have nothing to do but eat and drink; can you not go and make war upon the Greeks and bring me some of those beautiful Greek maid servants?" "That I will do," said Darius, and he ordered fifteen commanders of his army to go to Greece and look at their armies

and at their fortified cities. But Demokedes was elected as the leader. Two war vessels were equipped and a large ship laden with costly presents to the brothers of Demokedes was added. They sailed to Greece, and there Demokedes took his departure with the costly presents and bade the commanders good-bye. They tried to capture him, but the citizens of his native city Kroton defended him. Afterward he sent to the King Darius his card of marriage with the daughter of the celebrated Milo. At Kroton he started a medical school, and he was by far the most celebrated physician in Greece after Hipocrates, and to his college came all the young men from over the world, who would study the art of medicine.

THE ETIOLOGY OF TUBERCULOSIS.—(*Wien. Med. Chir. Centralbl.*)—Villemin was the first to discover the conferring of tuberculosis upon animals. The inoculation of tuberculous matter into animals has been tried by Cohnheim, Solomonson and Baumgarten, and Tappeiner proved the possibility of conferring the disease by inhalation. The statistical tables show that one-seventh part of all human beings die from tuberculosis, and if we take the lower classes alone, one-third are destroyed by this terrible disease. Koch, the medical counsellor of the German empire, has investigated the matter thoroughly. The experiments made on this subject had been hitherto without success, because the methods of dyeing the micro-organisms had not been satisfactory, and even Cohnheim, the first investigator, says in his recent book on general pathology, that the direct proof of tuberculous virus is a problem not yet solved. Dr. Koch has dyed the virus in the following manner: The objects to be examined are dried on the objective glasses. They are then put in a solution of 200 ctm. of distilled water, in which is dissolved one ctm. of concentrated solution of methylene blue. To this is added a 0.2 ctm. of a 10 per cent. solution of caustic potash. The glasses are kept there for twenty-four hours, and then they are put in a concentrated aqueous solution of vesuvine and cleaned with distilled water. By this process all the other tissues take on a brownish color, but the bacilli are stained blue. The bacilli thus prepared show a peculiar appearance. They have a rod-like

form, are very thin, and one-quarter of the diameter of red blood corpuscles long. On those points where the tuberculous process is in rapid progression, the bacilli will be found in densely packed groups and bunch-like aggregations. (In all the hospitals at Berlin the diagnosis of tubercles in difficult cases is now made in this manner by the microscope.)

ST. PETERSBURG.—Surgeon-General Busch, of the navy, has been sentenced to four years' banishment to Siberia and discharge from the navy for "selling offices." Happy Russia!

IMPOTENTIA VIRIS.—(*Gazetta Ukarska*).—A healthy man, twenty-four years of age, who practiced masturbation for a certain time, was sued by his wife for impotence, and she got a divorce. From this time on the man suffered from attacks of melancholia, but recovered and paid his addresses to another woman. A short time before the stipulated marriage he had the same attacks, and he became so affected that he tried to commit suicide. Dr. Janiszewski found the patient to be well developed with but a slight sensibility on the lower dorsal vertebræ. The prepuce of the penis had a low temperature. The doctor thought, in absence of any pathological symptoms, the case to be of a moral character, and treated the patient accordingly. He persuaded him to marry, but he forbade cohabitation for the first two weeks. At the same time he galvanized the patient, one electrode applied to the dorsal vertebræ, the other to the scrotum. Cold baths were administered to the lower part of the body and small doses of strychnine were given. After the time named the patient recovered.

SUDDEN DEATH IN PHTHISIS CAUSED BY ENTRANCE OF AIR INTO THE BLOOD VESSELS.—(*Berl. Klin. Wochenschr.*)—A patient twenty-two years old, of a phthisical family, showed indistinct respiration with dullness on the right lobe of the lung. The expectorated matter was greenish and feculent. After being three weeks in the hospital he suddenly collapsed and died without convulsions. The autopsy showed tubercles in the right lobe and a small cavity in the upper part of the same lobe. There

were three small cavities in the left lobe, two being filled with caseous matter, the third with blood and air. The heart was somewhat enlarged, and showed the left ventricle filled with blood and air, as was also the right ventricle. All the main arteries contained blood with air bubbles. All the arteries and veins of the brain were filled with air. The air in the chest had broken into a branch of the pulmonary vein, and thus by the action of the left ventricle the air was forced into the whole system.

LA FRANCE MEDICALE says that the radical cure of hydrophobia as reported by Bonley and Dartigue, by means of *hypodermic injections of pilocarpine* is not so reliable as thought at first. Dr. Dartigue admits that he administered at the same time arsen. of strychnine, hyoscyamine and monobromate of camphor. It is difficult to distinguish the effects of this "mitraille" of medicaments.

HYSTERIA IN THE MALE.

It is now admitted by all practitioners, that hysteria is not exclusively the bane of women. Man may also, in some cases, present all the characteristic features of this disease: vomiting; epileptiform crises; paralysis; choreic movements; anorexia; nosomania (mimicry of diseases); necrophobia; all of which may appear in individuals of the male gender with the same intensity and the same intractability as in the female, or be relieved as promptly, under the same treatment.

While perusing the proofs of a concise treatise on Hydrotherapy (now being published), through the kindness of Mr. Pascal, we have been surprised by the number of adolescents who have applied to the Hydrotherapic Institute of Passy, to be cured of this disease. And what is remarkable, is that a number of these youthful patients came from the most distant and different countries. Whether Russians, English, French or Swiss, their symptoms were always identical. (In his work on hysteria major, Mr. Paul Richer made the same remark in regard to women.)

Here are, in a few words, some of the cases which will attract

practitioners' attention in the *Précis d'Hydrothérapie.* just referred to:

The first case is that of a young man from Nancy, emaciated, and affected from his infancy with marasmus. When presented to Prof. Charcot, he was suffering from vomiting and paraplegia, and placed under the care of a parent who allowed him everything that he wished. Brought to Passy, this case was treated by the water-cure; two douches a day; temperature 11° C. After a month, he had regained the power to walk, and he was put on gymnastics. A month later he began to learn fencing. Three months from the time of his admittance, he left the establishment entirely transformed, and as vigorous as the boys of his age.

Another boy from Nancy, æt. sixteen, came to Passy after trying all the ordinary means of cure. His parents had neglected nothing that was of a nature to relieve him. In despair of any success, they applied to Prof. Charcot, for whom a diagnosis was easy. His nervous crises and paraplegia could be nothing else but hysterical manifestations. This young patient was put under the care of a professor whose duty it was to give him intellectual work to do in the institute. While under treatment he had a relapse, following a five weeks' sojourn in his family. Patient afterward left the establishment cured.

Another case just as remarkable was that of a boy from Dunkerque, æt. eleven. In 1875 he had applied to Dr. Barthez, who, seeing the long standing of the disease, the number of physicians employed, and the variety of therapeutical means used, called Prof. Charcot in consultation. Both concurred in making a diagnosis of hysteria, and recommended rational hydrotherapy. In this case likewise, paraplegia was a predominating symptom. The leanness was extreme. There was anorexia in the way of alimentation. After a month's treatment, appetite had returned, and the youth could jump on one leg. After two months, he could walk naturally. After three months he left the institute, in spite of the doctor's advice to the contrary. Five months later there was a relapse. A new course of hydrotherapy cured the patient definitively.

Among other cases, Mr. Pascal cites that of a boy ten years old, from Dieppe, who was treated in Passy about the time of the preceding patients. Anorexia and paraplegia were again the main symptoms. The same treatment was used; two douches a day, temperature 11° C., filiform douche; later, gymnastics; during the whole treatment, a severe discipline. Same success; that is, a cure in two months.

A boy twelve years of age, from Paris, was another instance. He was an only son. He was under the care of a well-known physician of the capital, but his parents, frightened at the doctor's diagnosis of a cerebral tumor, consulted Charcot, who diagnosed hysteria. The position in a circular arc during a crisis, and the craving of the boy for dolls, and all things looked after by little girls, were evident symptoms. He was sent to the hydrotherapeutic establishment, and the cerebral tumor disappeared under the repeated use twice a day of the spray, and the filiform douche. The treatment was continued for five months. The last case was that of a tall child, son of a nervous mother, who had, beside paraplegia, spasms of the œsophagus. He was unable to feed himself, and was alimented through a sound. After ten days' treatment, he was able to feed in the way of other people, and six weeks from the time of his arrival at Passy, he returned to his family perfectly well.

This brings us to the conclusion that the organization of water-cures in all our hospitals commends itself to Boards of Health (*Assistance publique*) in every city in France, and that the adoption of Fleury's doctrine by all who make use of baths in their treatment, will prove a great progress in the therapeutics of nervous diseases, so common in this age, and so discouraging for those who have not made a special study of hydrotherapy.—*L' Union Médicale.*

HEREDITY. — Brown-Séquard, at a meeting of the French Academy of Sciences, March 13, 1882, presented a communication on experiments made on Guinea-pigs, which prove that accidental affections of the parent are sometimes transmitted to the offspring.—*Archiv. Gen. de Médicine.*

ARTIFICIAL RESPIRATION.—Dr. De Chilly presented the following method of treating asphyxia: There is a mechanical means, extremely facile in its application, to force the asphyxiated to breathe with full lungs. It consists in converting the chest into bellows, the sides of which are represented by the ribs. In order to effect this result, it suffices for the subject to lie on the back, and as much as possible, on an inclined plane. The operator, standing on one side, with his face turned toward the subject's feet, dips the four flexed fingers of each hand as high as possible under the false ribs on either side, and grabs them firmly. This prehension should be made on either side where the parietes of the chest project the most below. Now, the operator executes alternate motions, elevating and depressing the ribs which give the chest its greatest expansion and compression, for the motions affect the whole sides of the chest.—*Bulletin de l'Académie de Médecine.*

This process is not new, but the description will refresh some readers' memories.

TREATMENT OF WHOOPING COUGH.—Jules Simon acknowledges that no specific exists for this disease, and after trying all the modes of treatment which have been extolled in turn, he falls back on the use of tr. of belladonna and tr. of aconite root in equal parts, giving two drops of the mixture morning and evening, and increasing to five or ten drops, according to age. After attaining the large doses, he diminishes them gradually to the original dose. At the same time, two or three emetics are given every week. For a child two years old, a teaspoonful of the following mixture will do:

℞ Powd. ipecac..... .0 | 5
Syr. of ipecac.....30 |
M.

Should the child vomit his food during a crisis, he should take a dessertspoonful of black coffee, and eat another meal.

The main indications to fill are, above all to avoid cold, and observe the strictest hygienic precautions. The child should remain ten days in bed, and stay indoors for a month or six weeks, according to the season of the year.—*Le Praticien.*

TREATMENT OF APHONIA IN SINGERS AND ORATORS.—Dr. Corson, in the *Revue Médicale*, advises in this trouble to take a piece of borax of .15 or .20 grams into the mouth and let it melt. An abundant secretion of saliva takes place. Public speakers, lawyers, preachers, etc., should take, the day preceding that when they have to speak, a glass of sweetened water in which is dissolved 15 grams of nitrate of potassium, which will cause profuse perspiration. Under the same circumstances the following gargle will be useful:

℞ Alum.....5 to 10
Honey .....20
Barley decoction .....200
M.

Another means consists in the use of an infusion of jaborandi, three grams in a cup of boiling water, to be taken in bed in the morning, to cause a good perspiration.—*Lyon Médical.*

EXPERIMENTAL RESEARCHES ON THE GRAFTING OF DEAD BONE UPON LIVING BONE; RESORPTION OF SEQUESTRA.—Mr. Lannelongue recently made a communication on this subject before the Surgical Society, May 17, 1882. Says the doctor: "A true sequestrum may exist under two conditions: it may either be bathed in pus, or be surrounded with granular membranes whose granulations come in contact with its sides and sinuosities. In the first case, clinical observations and experiments have shown that a sequestrum remains indefinitely *in statu quo*. In cases where granulations exist, there may be a good deal of absorption." Experiments made by Billroth on the process of resorption of ivory implanted into living bones or tissues, together with those of Langenbeck and Diffenbach, have supported that opinion. But Mr. Lannelongue's experiments were to the point. He used fragments of bone found in the halls of amphitheaters, where they had laid for years, and, after previous disinfection, introduced them into the bones of animals, in which they were subsequently absorbed. This is a demonstration that sequestra may, under some conditions, be reabsorbed.—*L' Union Médicale.*

# Editorial.

## Congressional Appropriations for Medical and Health Purposes.

The action of the present Congress in reducing the appropriation of money for carrying on the work of the National Board of Health, to so small a sum as to suspend much of the most important work of that board, is a striking illustration of Congressional ideas of political economy. We are no advocates of national centralization, or of calling on the general government to do what can be better and more economically done by the state or local municipalities. But a former Congress deemed it wise to create a National Board of Health, and to assign to it duties of importance to the whole people. During the brief period since its creation, the Board has certainly done much useful work, and has barely had time to mature plans for accomplishing much more, when it finds itself seriously crippled by an unreasonable reduction of the annual appropriation. The same spirit prompted the committee of one house to report in favor of reducing the ordinary appropriation for the library and museum of the Surgeon General's office from $10,000 to $5000, which, if finally adopted, would arrest the publication of the *Index*, and permanently injure both those important interests. If the national revenues were deficient, or if the same apparent economical spirit was manifested in regard to all the items contained in the appropriation bills passed by Congress, we might respect the motives of its members, however much we might think they erred in judgment. But when we find items in the same appropriation bills amounting to millions of dollars, freely voted, for objects of no national importance, we can neither respect their consistency

nor their ideas of economy. And when we look further and find that a majority of the members of the same Congress have deliberately voted more money, taken from the hard earnings of the American people, to pay for the *liquors and cigars* of one Congressional debauch, under the pretense of a battle-field celebration, than they are willing to vote for the support of two as important and permanent educational institutions as the Army Medical Museum and Library, we confess to a feeling even beyond that which is expressed by the word disgust. It is quite possible that the time may come when members of Congress will learn that the greater part of the sixty thousand or seventy thousand practitioners of medicine in the United States are voters.

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THE AMERICAN MEDICAL COLLEGE ASSOCIATION.

This association, or what there is left of it, held a meeting in Cincinnati recently, the proceedings of which are published in a recent number of the Detroit *Lancet*. We notice that a list of colleges is given as having withdrawn from the association since it adopted the requirement of three years' study and three consecutive annual courses of college instruction, in such a way as to convey the impression to the reader that all the colleges mentioned withdrew *because* of the *adoption* of such requirement. Yet the Chicago Medical College is included in the list, when the officers of the association well knew its withdrawal was based exclusively on the fact that if the association ever did anything it would recede from such requirement, and the College was not willing to accompany it in any such retrograde movement.

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The *British Medical Journal* says that "the commission appointed by the French Academy of Sciences to investigate the question of the advisability of modifying the system of quarantine in Egypt have sent in their report." But it is no longer a question of quarantine, but one of exclusion.

# Items.

IODOFORM INSANITY. — Schede has noticed that the use of iodoform has been attended with marked psychical symptoms. One type which is very noticeable among children is marked by dullness of the special senses, vomiting, and spasms of single groups of muscles. In adults, Schede has on two occasions seen general mental confusion, loss of personal identity, loud singing and violence. He has had under observation cases of melancholia attonita, also two cases of melancholia with frenzy, and three cases of simple melancholia; all arising from the use of iodoform.

THE NATURE OF INSANITY.—Dr. Charles Mercier (*Journal of Mental Science*, January, 1882) discusses the nature of insanity, and endorses the opinion that insanity was the failure of adjustment of the organism to its environment, expressed by Hughlings Jackson before his paper was completed. Exactly the same opinion was expressed in an article on insanity in *Gaillard's Medical Journal*, Vol. II, p. 452, in slightly different terms.—*Journal of Nervous and Mental Disease.*

Mr. F. M. Balfour was on Wednesday, May 31, elected to the new professorship of Morphology in the University of Cambridge. Prof. Balfour is a young man, having taken his degree, through the Natural Sciences Tripos, in 1873; and it is to be hoped that the duties of his professorship will not interfere with his continuance of the work of original investigation for which he has shown himself so eminently qualified.

There is no such tonic as happiness.

# Selections.

A STUDY OF BLOOD. By LESTER CURTIS, M.D., Chicago, Ill.

In the transactions of the American Medical Association for the year 1875 appeared a paper by Dr. Louis Elsberg, of New York City, entitled, "Notice of the Bioplasson Doctrine." It gave the results of some researches carried on in the laboratory of Dr. Carl Heitzmann, formerly of Vienna, but now of New York, and was concerned with the structure of the cell.

According to these observations, every cell contained fine fibers which branched and inosculated and formed a close net-work, which filled every part of the cell. This network was supposed to exist in all cells, its contractions and relaxations to constitute the amœboid movements of cells; in short, it was supposed to be the living matter of the cell. Before this time Dr. Heitzmann himself had described the same thing in a paper before the Vienna Academy of Sciences, in the year 1873, entitled "*Bau des Protoplasms.*"

Very little notice was taken of the subject at first, at least in this country. But of late several papers on the subject in Europe, and especially its favorable notice in Klein's Atlas of Histology, have given it more prominence.

The subject is one which differs from ordinary histological subjects, such as the structure of a gland, or the termination of a nerve, which persons interested in some other department of biology can afford to ignore. It is concerned with the very foundations of physiology and histology. It is of as much interest to the botanist, the diatomist, or the student of life in any form, as to the student of human physiology and histology. If the doctrine prove true, we shall have made a long step in ad-

vance in the understanding of cell growth, and shall have to unlearn many things which, until now, we had supposed settled. As I am occupying a position where I am expected to have some knowledge of my own about such things, I have looked into the matter for myself.

In order to make sure of pursuing the right course, I wrote to Dr. Heitzmann, asking him his method of demonstrating the structure, and received the following reply:*

NEW YORK, June 30, 1879.

LESTER CURTIS, M.D.,—*Dear Doctor:* In reply to your favor, dated June 27, 1879, I have to say as follows: The lens for seeing the structure of protoplasm must be a first-class 1-10 Immers., such as I use of Verick's, Hartnack's, Grunow's and Tolles' manufacture. Just the reticular structure itself is the best test for a lens, so far as my own experience goes.

Take a drop of pus, fresh, without adding anything, and you will see the wonderful structure in each pus corpuscle with great ease.

Prick your skin on the palmar surface of the thumb, transport the drop on a slide, and cover right away with a thin covering glass, the edges of which have been oiled, so as to prevent evaporation of the fluid. In the perfectly fresh blood you will see the structure in each colorless blood corpuscle.

Add to a drop of fresh blood a small drop of 40 per cent. solut. of bichromate of potash; this will, within 1 hour, extract the hæmoglobin, and you must succeed in seeing the reticular structure in each red blood corpuscle.

Keep ordinary yeast (Torula cerivisiæ) for a fortnight in a 30 per cent. solution of bichromate of potash, and examine a drop with a good 1-10 Immers. lens. You cannot fail in seeing the network in each oidium.

Take any protoplasmic body, best epithelium, cartilage, etc., best kept for a few weeks in ½ per cent. solution of chromic acid; take any fresh living protoplasm such as, for instance, an amœba from an infusion, and you must see what is to be seen with accuracy. If you fail, come to New York to my laboratory, top floor of my residence, and after two hours you may leave for Chicago, with the satisfaction that the net-work in the protoplasm is plain. About four hundred gentlemen have seen it so far in my place.

Yours truly, DR. C. HEITZMANN,
No. 37 West Forty-fifth Street.

On receipt of this, I repeated the experiments as directed. The glasses I have used are a 1-10 immersion, made by Wales in 1874; a pretty good glass for one made at that time. It has, in my hands with sunlight and a slip of blue glass, gone through Möller's balsam *probe platte* without difficulty. I also used a

*I publish a careful copy of this and the following letter, by Dr. Heitzmann's permission.—L. C.

Powell & Lealand 1-16 made later in the same year. With this glass I have glimpsed the lines on the dry *amphipleura* by simple lamp-light, without any sub-stage appliances whatever. In Mr. Tolles' hands, by the use of his traverse lens, it showed the lines on number 20 of the *probe platte* fully as well as one of his earlier duplex 1-10s, although, since that time, I have seen the diatom better with one of his later 1-10s. I use a stand made by Bulloch, fitted with a Powell & Lealand achromatic condenser. I find that for making out delicate anatomical structures, with the use of high powers, the condenser is indispensable.

I began my investigation by the study of blood as directed by Dr. Heitzmann. I split off a thin film of mica and oiled the edges. I then pricked my finger with a needle, put a drop of blood on a slide and covered it immediately with the mica. I began the examination with the 1-10. On bringing a white corpuscle into view, I thought, at first, that I saw the net-work; a number of fine lines appeared, crossing the corpuscle in all directions, but the outlines of the red corpuscles in the field were indistinct. The glass had been used in examining objects protected with a thicker cover, and was not adjusted for such a thin film as I was then using. In order to improve the definition I turned the screw collar. As I turned, the outline of the corpuscle grew sharper, but the net-work became more indistinct. Finally, when the outline of the corpuscle came out clear, I could see nothing of the network. Instead, the corpuscle appeared to be covered with small nodules of unequal size, placed at irregular intervals.

I went through nearly the same experience when, in place of the 1-10, I put on the 1-16. At first, before the cover adjustment was right, an indistinct appearance resembling a network was seen. But, when the adjustment was such that the outline of the red corpuscles in the field was sharpest, the same thing was seen as with the 1-10, only with greater clearness. I could, with the 1-16, by toying with the fine adjustment, focus the top of the nodules, while the remainder of the corpuscle appeared in shadow; and then, by gently lowering the glass, I could bring the valleys into view and leave the tops of the nodules indistinct. By changing the direction of the light, I could make the nodules

cast shadows in first one direction and then in another. With all the care I could use, I could get no other appearance of a network than I have described as showing when the adjustment of the glass was wrong.

Having an abscess handy in my own person, I next examined some fresh pus, first with the 1-10 and then with the 1-16, as I had done with the blood.

The pus showed very nearly the same as the white blood corpuscles, possibly more distinctly. Several of the pus corpuscles were packed full of dancing granules. The movement of these granules seemed to be independent of each other, and reminded me of small animalcules imprisoned in a narrow space. By fixing my attention on one of them, and watching it for some time, I have seen it change its location and travel nearly half way across the corpuscle before escaping from view.

I next put a drop of blood on a slide, and added to it a small drop of a 40 per cent. solution of bichromate of potash. After an hour or two, I examined the red corpuscles with the 1-10 and 1-16 as I had done with the fresh blood. Many of the corpuscles had lost a good part of their color. With the color, they had also lost the smooth surface which they usually possess in the fresh state. The edges were finely crenated, the surfaces were thrown into nodules and ridges, and all the corpuscles were pinched and shrivelled, and were much smaller than the fresh corpuscles, appearing as though acted upon by an astringent.

I took the trouble to measure seven of these corpuscles in a given area of one field of the microscope. They were as follows, measured in both directions, and given in parts of an inch :

| | | |
|---|---|---|
| (1) | 1–6,000 | 1–4,500 |
| (2) | 1–5,000 | 1–5,200 |
| (3) | 1–4,500 | 1–3,700 |
| (4) | 1–4,500 | 1–3,871 |
| (5) | 1–4,275 | 1–3,946 |
| (6) | 1–6,000 | 1–3,461 |
| (7) | 1–3,461 | 1–4,687 |

Here, also, I failed to get satisfactory evidence of the existence of a network; though the shadows between the ridges and elevations might resemble one.

I carried my investigations to this point, and, after carefully reviewing my work, to be sure I had made no mistake, I wrote to Dr. Heitzmann again. I told him how I had proceeded and what I had seen; I also enclosed some drawings of white corpuscles as they appeared to me, and some of red corpuscles, which had been acted upon by the 40 per cent. solution of bichromate of potash, and asked his interpretation. He sent me the following letter:

NEW YORK, Feb. 8, 1880.

DR. LESTER CURTIS. *My Dear Doctor:*—I have read your letter with great interest. It merely proves how difficult it is to learn microscopy as an autodidact without the assistance of a reliable teacher. The network is seen plainly when the peripheral contour is not plain; in a globular body the central portion shows the structure best when the periphery is out of focus. You evidently did not learn to discriminate between different layers in one and the same corpuscle, as illustrated by your sketches. You draw everything—in and out of focus. You should draw only what is clear and sharp in *one* focus. Look at the Histology Atlas by E. Klein and Noble Smith, first volume (1879. Lippincott publishers). E. Klein is the best microscopist of London, England; he draws the network even nicer than it really appears, and gives me credit for the discovery.

Purchase for a few cents the recently issued researches on red blood corpuscles, by L. Elsberg (1879. Putnam Sons, N. Y., publishers) and you will see and learn everything you desire. You evidently are a good, faithful man. Could not you come to New York in my laboratory? Here you would learn more in one day than you possibly can learn at home in months.

Yours truly,

DR. C. HEITZMANN.

On the receipt of this letter I was, of course, dismayed at my great presumption in attempting to make out the structure of a blood corpuscle with a 1-16th of an inch object glass; a task so much more difficult than resolving the *amphipleura* that no ordinary mortal may ever hope to accomplish it. But I could not resist the temptation to return to the subject. Accordingly, I re-studied the white corpuscle. I found that when I had, by careful manipulation, succeeded in focusing the bottom of the valleys, I could go no further, the slightest touch of the fine adjustment, the slightest pressure upon the limb of the instrument, even, would cause a blurring of the image. I tried again and again, and am obliged to confess that I cannot focus different planes of a white blood corpuscle.

While I was doing this my mind would keep reverting to the

war once waged over the structure of diatoms; how the nodular surface of pleurosima angulatum was supposed to be covered with hexagons so strikingly similar, in some respects, to this network; and I remembered how the whole thing was cleared up when object-glasses and modes of examination became more perfect. The idea would keep coming to me that this network, also, was an optical illusion, explained in the same way.

I began a series of persecutions of my friends. I importuned almost every one that I knew, who had a microscope, to look over the subject and tell me what he saw. Some of these were persons of recognized skill in microscopic manipulation. Some, even, have a national reputation. Many were kind enough to do as I requested, but no one was able to see the network. Indeed, I have never seen any one who claims to have seen it. A few have allowed me to use their names. Dr. H. A. Johnson, of this city, carefully went over the ground with me, using a superb new Tolles' 1-10, and a new Zeiss 1-12 homogeneous immersion. He considers what I have described to be true appearances. Dr. Sternberg, of the United States Army, has studied the white blood corpuscle especially, with the best appliances at the command of the Government. He tells me that he has never seen such a network.

A professor in one of the medical colleges in this city, in one of his lectures, described the network, as given by Klein, as a new discovery. Later in his course he corrected this statement, and said that subsequent investigation had convinced him that the network was an optical illusion. This was done independently of my work.

I might increase the list, but do not feel justified in using the names without permission.

As to Dr. Heitzmann's criticism of my drawing, I will only say that I had supposed a drawing for scientific purposes to be good, not as it left out objectionable details and improved upon those represented, but just in proportion to the accuracy with which it reproduced the appearances seen. It has always been my aim to represent objects as nearly like what I saw as I could. Any other course has seemed to me to be not only bad drawing, but absolute dishonesty.

While engaged in these studies I met with certain bodies which I have not seen described elsewhere just as I have seen them, although Dr. Osler and others have spoken of having seen something like them in the blood of the lower animals.

The bodies are minute granules. They can be seen in blood, with a good high-power glass, without the addition of any reagent, but are best seen after staining. If, while studying blood with the microscope inclined, a drop of carmine staining-fluid be placed at the upper edge of the covering-glass, there will be seen bright red points sliding across the field of the microscope long before any other evidence of staining appears. As the staining-fluid comes down further, the points increase in number, until finally, when the field of the microscope has been entirely traversed, they are countless. Under a magnifying power of twelve hundred diameters, they appear as minute, round bodies. Their small size renders a measurement of them difficult; but I have estimated their diameter at from 1-20,000 to 1-40,000 of an inch. They stain deeply with carmine, and are highly refractile, the stained ones appearing as bright red points surrounded by a black rim. The width of this rim varies as the focus is changed; when they are slightly beyond the focus, the red point disappears, and they show as black dots.

I have seen these bodies in the blood of every person which I have examined, with one exception. I studied the blood of Mr. Griscom during a long fast which he underwent in Chicago. For part of this fast these bodies were absent. During their absence I observed many granular white corpuscles of exceptionally large size. They seemed to be composed of spherules of about the same size as the granules before described. The corpuscles often had an active amœboid movement. At this time the granules flowed out into the protruding portion in a kind of stream. Aside from this motion the granules were usually still. Occasionally, however, they had an independent motion, like the motions of the granules in the pus corpuscle before described. I have watched one of the granules move for a considerable distance through the corpuscle; the other granules at this time were vibrating uneasily like individual bees in a swarm. The corpuscle itself, with the exception of an almost imperceptible vibrating movement, remained still.

These corpuscles usually had one or more places destitute of granules, which resembled nuclei. The spots did not stain with carmine, and were unmistakable depressions. They seemed to me, therefore, to be places free from granules, rather than nuclei. Their floor showed a slightly uneven surface.

I studied these bodies for about two weeks, the time of the absence of the granules from the blood. After a time the granules began to return. At first they were of a low, refractive index, and stained faintly; gradually they assumed their usual appearance.

About the time of the reappearance of the granules, I noticed a change in the granular corpuscles. They stained more readily and more deeply with carmine than ever before; the places destitute of granules became larger and more numerous, and I began to see appearances as though granules were leaving them. On two occasions I saw bodies which presented all the appearances of the other granular corpuscles except that the nuclear-like space had enlarged to such an extent that the body was nearly destitute of granules. Many granules were seen in the act of passing out from the corpuscles, and many were seen near the corpuscles, as though they had just left them.

The conclusion from these facts seems to me to be warranted, that the granular corpuscles, at least, are composed of minute round bodies held in a stroma, and that, possibly, they may be the source of the granules found in the blood.

EXPLANATION OF PLATE.

Fig. 1. An ordinary white blood corpuscle, with one red corpuscle.

Fig. 2. An ordinary white blood corpuscle from another person, and two red corpuscles, lying one over the other.

Fig. 3. Granular white corpuscle from Mr. Griscom; granules beginning to leave the body.

Figs. 4 and 5. Granular corpuscles from Mr. Griscom, discharging their granules.

Fig. 6. A white blood corpuscle referred to by Dr. Heitzmann; from Klein's Atlas of Histology.

Figs. 7, 8, and 9. Representations of the network from "The Structure and Other Characteristics of Colored Blood Corpuscles," by Louis Elsberg, page 46, referred to by Dr. Heitzmann.

Fig. 7. Represents the network at rest. Fig. 8. In extreme contraction. Fig. 9. In extreme extension. These figures cannot be magnified less than 20,000 diameters, and must, therefore, be diagramatic.

# PLATE VI.

Fig. 1.

Fig. 2.

1/1000 Inch X 582

Fig. 3.

1/1000 of an inch X 1050.

Fig. 4.

1/1000 of an inch X 1050.

Fig. 5.

1/1000 of an inch X 1050.

Fig. 6.

Fig. 7.

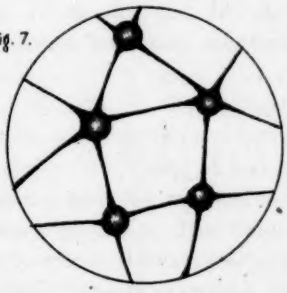


Fig. 8.

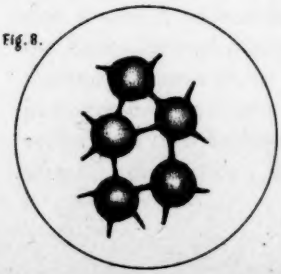
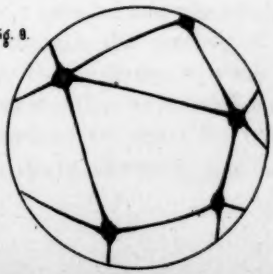


Fig. 9.



REPORT OF THE POST-MORTEM EXAMINATION OF THE BODY OF CHARLES J. GUITEAU, (who Died by Hanging June 30, 1882, at the United States Jail, Washington, D. C., in Execution of Judicial Sentence.)

The following physicians were present:

Dr. Noble Young, Physician to the Jail; Dr. A. McWilliam, his assistant; Dr. C. H. Nichols, Supt. Insane Asylum at Bloomingdale, N. Y.; Dr. A. E. McDonald, Supt. Insane Asylum, New York City; Dr. W. W. Godding, Supt. Government Insane Asylum, District of Columbia, and Drs. Witmer and Patterson, his assistants; Dr. Geo. L. Porter, Bridgeport, Ct.; Dr. Johnston Eliot, Washington, D. C.; Dr. D. R. Hagner, Washington, D. C.; Dr. Robert Reyburn, Washington, D. C.; Dr. W. J. Morton, Editor of *Journal of Nervous and Mental Diseases*, New York City; Dr. C. L. Dana, New York City; Dr. C. K. Mills, Philadelphia, Pa.; Dr. D. C. Patterson, Coroner, Washington, D. C.; Dr. J. F. Hartigan, Physician to Coroner; Dr. C. H. A. Kleinschmidt, Washington, D. C.; Dr. P. J. Murphy, Washington, D. C.; Dr. Z. T. Sowers, Washington, D. C.; Dr. F. B. Loring, Eye and Ear Dispensary, Washington, D. C.; Dr. D. S. Lamb, Acting Ass't Surg., U. S. A., and Dr. J. C. McConnell, Microscopist, and Mr. Ernst Schafhirt, Anatomist, Army Medical Museum.

The custodian of the body, Rev. Dr. W. W. Hicks, having requested me to make the examination, and this request being in accordance with one previously made by Dr. Young, I had prepared the following course of procedure, with the object of securing the most exact and satisfactory results: The external appearances of the body should first be noted; the cavities, except the spinal, should be opened and their contents examined; that after the removal of the brain, and its examination without incision, it should be transferred, properly guarded and protected, to the Army Medical Museum, where, through the courtesy of the Curator, Surgeon D. L. Huntington, U. S. Army, it would be photographed, and then a cast be taken; that its internal structure should then be observed, and portions set apart for microscopical examination; and that the entire operation should be

completed, as far as possible, the same day, to enable physicians resident elsewhere, present by invitation, to return promptly to their homes; and that the notes should be taken in duplicate.

Shortly previous to the examination, it was agreed between Rev. Dr. Hicks and the United States District Attorney, Geo. B. Corkhill, that the charge of the removal, preservation, and disposition of the brain should be vested jointly in Drs. Lamb, Sowers and Hartigan, and that the microscopical examination should be made by parties to be selected by the gentlemen making the agreement.

The examination was then conducted by me, assisted by Drs. Hartigan and Sowers and Mr. Schafhirt, and as near as possible in the order proposed. Drs. Kleinschmidt, Patterson, and others, took notes, and Mr. Charles Trought, of the Museum, the photographs.

By reason of delays, for which neither I nor my assistants were responsible, the examination was not begun until 2:30 P. M. (one hour and a half after death), in consequence of which the photographing was less successful, and a cast was impracticable.

The body, which was of a faint yellowish tint, was that of a man about five feet seven inches in height, and weighed one hundred and forty-five pounds.

The eyes were examined by Dr. Loring, who reported that the pupils were slightly and equally dilated; the vitreous was cloudy, and the fundus indistinguishable. The conjunctiva of the left eye was congested. He repeated the examination two hours later, and noticed an appearance as of transverse fracture of the lenses.

A small white scar, directed obliquely downward, forward and to the left, and confined to the scalp, was observed midway between the top of the left ear and median line of the head.

There was a yellowish furrow, a few lines in width, extending around the neck in a direction downward and forward, in line of rope. On dissection, the sterno-cleido-mastoid muscles were found to be torn in two, about half way between their points of origin and insertion. The thyro-hyoid ligament was also ruptured, and the hyoid bone and thyroid cartilage widely separated. The

large blood-vessels were not injured; neither was there fracture nor dislocation of the vertebræ.

The sexual organs were well developed; the mouth of the urethra was moist.* There was also phimosis, on reducing which, a considerable accumulation of smegma was observed.

*Skull.*—The right parietal bone was slightly flattened over a space about two inches square, just back of the fronto-parietal suture and to the right of the interparietal; there was a slight flattened elevation on the corresponding internal surface of the calvaria. The frontal suture was obliterated, the others quite distinct. A number of Pacchionian depressions were observed near the groove for the longitudinal sinus. In thickness the skull presented nothing remarkable.

*Membranes of the Brain.*—The dura mater was firmly adherent to the anterior portion of the calvaria in the vicinity of the longitudinal sinus.

There were adhesions of the dura also to the base of the skull; they were quite firm, and situated in the several fossæ, and most marked in the deeper parts of the fossæ, where also there were small patches, abruptly limited, of immovable arborescent congestion, with, however, no attendant thickening or pigmentation; this *stagnation* was again most marked in the left anterior and middle fossæ. There was no congestion of the dura except at the points just noted.

The dura and pia mater were adherent to each other and to the brain on both sides along a limited portion of the longitudinal fissure, in the vicinity of Pacchionian granulations.

The dura was slightly thickened along the longitudinal sinus. It was also slightly thickened and opaque along a portion of the line of the middle meningeal artery on each side.

The arachnoid of the upper convexity of the brain presented in many places, where it covered the sulci, small patches of thickening and opacity; elsewhere it was normal.

The pia mater was anæmic anteriorly; posteriorly there was slight hypostasis.

The cerebral vessels appeared to be normal in all respects.

* During the suspension of the body, erection of the penis took place, and the clothing was afterward found to be moist.

The orbital plates were well arched, and presented many conical eminences of large size. There was no roughening anywhere of the inner surface of the skull.

*The brain* was firm. Its weight, including the cerebrum, cerebellum, pons and medulla, and a portion of the dura, was 49½ ounces. It was slightly flattened in the region corresponding to the flattening of the parietal bone above mentioned. On section of the cerebrum there was an appearance as of slight thinning of the gray cortex; the measurements taken, however, gave depths of one-sixteenth to one-eighth inch in close proximity to each other. The white substance was almost absolutely anæmic. The cerebellum and island of Reil were both *covered* on each side.

*The fissures.*—The fissures generally presented a considerable depth; in many places, as in the right fissure of Rolando, amounting to seven-eighths inch.

The right fissure of Sylvius was typical; the left was separated from the first temporal fissure by a slight bridge deeply situated. The right fissure of Rolando did not connect with the fissure of Sylvius; the left was separated only by a small bridge deeply situated. Both were separated from the longitudinal fissure.

The first frontal fissure on the right side was not connected with that of Rolando, but at the posterior part was crossed by a secondary fissure. The same on the left side, except that the fissure was crossed by a small bridge near its center. The second and third frontal fissures presented nothing remarkable. There were numerous secondary fissures.

The præcentral and retrocentral fissures, on each side, were well defined, and were unconnected with other fissures. The interparietal fissure, on each side, terminated in the transverse occipital, separated only by a slight bridge. The parieto-occipital was well marked on each side. The transverse occipital fissure on the right side was ill defined; it began on the median surface and extended well outward. The first temporal fissure was well developed on the right side; on the left, was not of the usual length. Wernicke's fissure was well marked on the left side, but not confluent.

The calloso-marginal fissure was double on each side; the upper of the two being probably the true one. On the right,

the upper one extended back to the anterior margin of the paracentral lobule; on the left, not quite so far. The lower one extended on the right side to a line about half an inch in front of the parieto-occipital fissure, from which it was separated by a small bridge; on the left side, also, by a bridge of larger size.

*Orbital Surface.*—On the right side were seven fissures, radiating from a circluar fissure surrounding a small isolated convolution; on the left side were five fissures, radiating from a small shallow depression. The left collateral fissure was well defined, extending to the anterior extremity of the temporal lobe; the right was also well marked, but did not extend so far back as the other, and there was an attempt at confluence anteriorly with the temporo-occipital, a small bridge intervening. The left temporo-occipital fissure was well defined.

*The Convolutions.*—The following alone call for remark: The ascending frontal was well defined on each side.

The ascending parietal on the right side was well developed in its lower three-fourths, but narrowed in the upper fourth. On the left side the narrowing was less marked. The island of Reil presented on the right side five fissures and six straight gyri; on the left side seven fissures and eight straight gyri. The paracentral lobe was well marked on the right side; small on the left.

*Thorax and Abdomen.*—The usual median incision was made, and the abdomen opened. There was an extravasation of blood into the right pectoralis major muscle near the second rib. The adipose layer of the abdominal section was one inch in thickness. The dome of the diaphragm extended up to the fourth rib on each side.

There were old pleuritic adhesions at the apex of the right lung; the upper and middle lobes were congenitally united by connective tissue. The lung was normal throughout. There were also old pleuritic adhesions of the left lung to the diaphragm and between its lobes; three small tubercle-like, pigmented patches were observed in the upper lobe. The heart weighed ten and three-quarter ounces; its muscular substance was apparently normal. There was an abundance of fat upon its anterior surface, and a villous patch of old pericarditis near the apex of the left ventricle. The right ventricle contained a little blood just form-

ing a clot.* The valves were normal. The aorta was slightly atheromatous for a short distance above the valves.

All of the abdominal viscera presented large accumulations of fat. They were normally situated. The liver was congested; the gall bladder contained a little bile; the spleen was lobulated and enlarged; it weighed eighteen ounces; the capsule was bluish, the substance brown; the Malpighian bodies hypertrophied;† the pancreas was normal; the stomach contained food;‡ the intestines appeared normal; were not opened; the kidneys were congested; there was a small superficial serous cyst on the right one. The bladder contained a considerable quantity of urine.

The results of the microscopic examinations will be reported hereafter. D. S. LAMB.

*Army Medical Museum, Washington, D. C., July* 4, 1882.

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THE CONTAGIOUS DISEASES OF DOMESTIC ANIMALS.§ By EZRA M. HUNT, M.D.

The degree to which the diseases of animals are now attracting public attention has many foundations of propriety and necessity. If it were only that their sufferings and their wants appeal to our sympathy, and have claims upon our care, that appeal ought to secure some intelligent attention to their ailments. But they have become more intimately associated with us, in a scientific and practical sense, by the revelations and advancements of modern science. Biology compels us to include all life, and all its limitations, in our studies. Physiology and pathology, as applied to the whole animal world, indicate that the old recognitions of a comparative anatomy were but feeble expressions of those laws of symmetry which, in similarities and dissimilarities, in health and in disease, make the comparative study in physiology and pathology of still broader import.

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* A considerable quantity of dark blood ran out of the heart in the separation of the heart and lungs.

† Dr. Young states that the man was subject to malarial attacks while in the jail.

‡ He had eaten a dinner about an hour and a half before the execution.

§ Paper read before the American Health Association, Savannah, November 29, by Ezra M. Hunt, M.D., Secretary of State Board of Health, N. J.

Professor Flowers, in his address at the opening of the anatomical section of the late Congress, speaks of the "great revolutionary wave which has changed the whole aspect of biological ideas, borne onward mainly by the enormous advances in our knowledge of zoölogy, comparative anatomy and embryology."

Comparative anatomy was sure to become a prominent study so soon as we learned that the study of function is fully as important as that of structure.

Buckle, in his History of Clvilization, says: "The best physologists distinctly recognize that the basis of their science must include not only the animals below man, but also the entire vegetable kingdom, and that, without this commanding survey of the whole realm of organic nature, we cannot possibly understand human physiology; still less general physiology."

It is inevitable that comparative pathology must embrace all the diseases of animal and vegetable life. Sir James Paget, in his address, some months since, on elemental pathology, traced the comparative diseases of plants and trees, and morbid growths thereupon, in a way that showed how in this sphere we have much to learn. Dr. Wilkes well says the comparison of disease in men and animals may throw much light upon its nature; and it is remarkable that so few persons have been stimulated to the work by considering the long controversy which has taken place as to the relation between vaccinia and variola, or hydrophobia and rabies. A true human pathology should have its basis in comparative pathology. Here lies a "mine of wealth but little worked." It is evident that in all these directions there are demands for the closest study and comparison.

But to the disciples of prevention and the health publicist there are inducements and obligations additional to these. Many of the diseases which it is our duty to prevent are derived or derivable from animals.

The list furnished by Professor Law to the National Board of Health names ten contagia and twenty-two parasites common to men and animals, besides fifteen parasites causing enzoötics in animals.

Dr. Charles Cameron, chairman of the health section of the late English Social Congress, says: "Recent discoveries show

the enormous importance of the study of comparative medicine and pathology. It is only by such knowledge that preventive medicine can be most rapidly and surely advanced."

There is not merely the incidental fact enlarged upon by Ernest Hart, when he tabulates fifty typhoid epidemics, fourteen of scarlatina and seven of diphtheria, as somehow having their origin through milk supply.

Tuberculous disease is now claimed to be transferred by milk from animals to man, as well as the foot and mouth disease so much dreaded in England. Forms of anthrax and splenic fever and erysipelas, and perhaps some forms of boil, carbuncle and skin diseases, depend on specific conditions of diseased meat.

Some allegations have also been made as to ill effects from the flesh of so-called hog cholera disease, and as to lard made into butterine therefrom.

It becomes our duty to prevent disease in the lower animals, if only to prevent their transfer to mankind. The prominence which the study of parasitic diseases has very properly assumed attaches to this study a vast importance.

Dr. Cobbold, the eminent helmintologist, has catalogued upwards of 200 specimens in the museum of the College of Surgeons, London, in order "to show every parasitic animal that can affect the human body, and a selection of the principal types of those that inhabit the lower animals, especially such species as are associated with man."

To these we are constantly having additions, as in the new nematode discovered by Bastian, in the case of the boy who was at first supposed to have died of typhoid fever on the training ship Cornwall.

So impressed have not only professional men, but the public, become with the liabilities to various diseases that may occur through the flesh or milk of animals, that there is still another view that presses itself upon our attention.

There is no class of ailments against which the individual is so helpless to defend himself, and hence governments are striving to find out the extent of such maladies, and the means for their limitation and extinction.

Already, as we are well aware, the subject comes up as a great

commercial question, and as involving great economic questions as to food supply.

No one can witness the rigid inspection now being had in England of all foreign cattle and sheep, and the interdiction which has so fallen upon American swine as almost to banish its live-stock from foreign markets, and to affect the trade in hams and salted pork, without realizing that the question has assumed importance which, alike in the interests of health and of trade, deserves the closest attention of all sanitarians.

Great Britain imports 5,250,000 cwt. annually.

In the present paper we propose to refer to most of these various diseases with only brief allusions.

Foot and mouth disease has, fortunately, not planted itself upon American soil. In the cases alleged to have come from our ports, Dr. Lyman, the chief veterinarian of the Agricultural Department, has been able to show that they were not American cases, but two bulls and eight heifers sent from England. They were promptly quarantined, and no spread among our cattle occurred. Yet because of the degree to which this disease, if imported, would affect our meat, and still more our milk supply, it is incumbent upon us to take all proper means to secure its exclusion.

Contagious pleuro-pneumonia, although occasioning great loss of stock and milk supply, has not as yet been proven to cause any specific disease through the meat or milk. Yet the trend of present opinion (see Cameron, etc.) is to look with suspicion upon it, as well as to regard it as a threatening source of inferior meat supply. There are urgent reasons why it should be watched and studied by sanitarians, both in the interests of health and of trade. For it is to be remembered that whatever reduces the quality of meat or adds to its scarcity, is at least indirectly the cause of ill health, since the poorer classes suffer physically from the higher prices, and have to feed on inferior flesh.

Splenic fever and other forms of anthracoid disease are of great interest to us, because they may be communicated by inoculation, or by the eaten meat, and also because the Texas cattle fever bears a suspicious relation thereto, so that it is called, by some good authorities, a splenic fever, or anthracoid disease.

While the most fatal and pronounced form of splenic fever is more common among foreign cattle than with us, these allied forms are to be closely studied, and guarded in the interests of public health. All cattle now going from America are closely watched for Texas fever. Recently we saw some cases in the yards at Birkenhead, which were feared to be of this or some splenic variety.

There is no contagion more dreaded than that of these anthracoid diseases.

In France the disease, as it affects sheep, is a loss, we are told by Pasteur, of twenty million of francs, or four million of dollars, annually.

Our losses by the Texas cattle disease have been large enough to lead to close inquiry, and the production or sale of such meat comes immediately under the commendation of the sanitarian.

Within the present month it has been my duty to exercise watchful oversight of a localized outbreak of anthrax. Ten cows, three horses, three sheep, one hog and several pigs have died, as if infused with a virulent poison, and post mortems have indicated the splenic character of the outbreak. The swine perished within forty-eight hours after having gotten a taste of one of the lungs, and a bull, which had broken into the pasturage, died in three days. A farmer who assisted in a post-mortem, and whose hand had no abraded surface, had swelling of the arm and other symptoms, which required medical care.

The swine disease, known as pneumo-entertis, swine plague or hog cholera, has prevailed in at least thirty of the States, and the losses by it have been enormous. The special report, No. 12, of the United States Department of Agriculture, 1879, refers to a tabular statement for 1877 of the losses of farm animals, chiefly from infectious and contagious diseases. The amount is stated at $16,653,428. About two-thirds of this sum was occasioned by the loss of swine by diseases presumed to be of an infectious or contagious character.

This particular disease continues to prevail in many parts of the country, and is far more common than in Great Britain or on the continent of Europe. Yet Fleming, in his *Veterinary Journal* for September, 1881, speaks of it as "an inoculable disease,

due to a particular germ, which in Europe and America threatens to ultimately exterminate the porcine species."

Because it does not produce such a disease as trichinosis, its effects upon the quality of food supply must not be overlooked.

The immense losses not only affect the poorer classes by causing higher prices, which means a diminished supply of meat, but furnishes a great quantity of meat of inferior if not of diseased quality. There have been cases of sickness from pork that have not been caused by trichinæ. The new nematode found in the boy who was thought to have died of trichinæ on board the ship Cornwall (see report of Mr. Powers and Dr. Bastian, local government board, 1879), has been already alluded to.

Ballard and Klein have recently reported an acute specific disease produced by eating pork infected with a species of bacillus in two series of cases (see State Med. Sec., meeting Med. Congress, 1881), the pork being claimed to have come from America. The disease might be called a pneumo-enteritis, as both lesions were found.

Prof. Tidy, chemist of London Hospital, in some recent researches as to poisoning from eating pork sausages, thinks he has shown an alkaloid body and some chemical changes to have caused the sickness. Meat of diseased animals putrefies more readily and shows a tendency to a septic condition which the juices of the stomach are not always able to resist.

Cases of meat poisoning that are not specific in any known sense, are multiplying.

There is a very great temptation in the case of small animals, like swine, when a disease breaks out among them, to hasten them into the potted meat can, the sausage machine, or the salt pork barrel. Any disease so extensive in its ravages and so deadly in its type, must be carefully studied by the sanitarian as a guardian of the public health.

To the disease known as trichinosis we need to turn especial attention, because of its direful results, its real existence, and the interdiction it has caused to our own great pork trade in almost every foreign country.

It is not necessary here that we sift all the historical and political facts which have to do with this trade interruption. Enough

is real to justify serious attention, and enough false or accepted on insufficient evidence to astonish us that countries which have long been the recognized producers of cases of the disease should all at once have seemed to assume that trichinosed pork is an American production. Neither is there need that we fully trace the disease and its results, since this has been so often and daily done, and because the monograph by our fellow member, the lamented Surgeon W. C. W. Glazier, of the Hospital Marine Service, has so fully presented it.

We think he and others show that its occurrence here in proportion to the number of our people and our immense number of swine is not equal to that of other countries. This nematode was first discovered in Guy's Hospital, London, in 1833, and up to 1836, inclusive, nine cases had been found among hospital patients in that city; one in Bristol, England; and six in Ireland. In 1843 the trichinæ was observed in Denmark, and not long after in Germany. It is to be remembered that all these cases, as also the monograph of Luckhart and the paper of Zenker, as well as most of the observations of Virchow, antedate the record of any fatal case in the United States. The first series of American cases are those alluded to by Virchow, as having occurred in Davenport, Iowa, in 1856, in a German family. The mother returned to Germany in 1861 and died in 1864 in a German hospital.

In her breast, which had been extirpated for cancer, encapsulated trichinæ were found. Before this the disease had become well-known in Great Britain and Europe, and perchance the German woman was a host of the cyst on her first arrival here.

The report of Dr. J. L. W. Thudicum on the parasitic diseases of quadrupeds used for food, is the report of the medical officer of the Privy Council, 1864, covers the history up to that time. The list of Dr. Glazier of trichinosis epidemics in Europe since 1860 (pp. 82–87), and that of cases in the United States reaching to 1880 (p. 172), completes the record, and shows how great a portion of the aggregate has occurred in other countries. His list of epidemics in Europe since 1860 comprises "about 160 epidemics, with 3044 cases, and 17 places where no number is given." Allowing, according to Meissner three cases each for

places where no number is given, the whole numbers will reach 3095, with 231 deaths, making a total of about 150 epidemics, 3800 cases, 281 deaths, and 700 cases and 50 deaths not in the list. See p. 87, Glazier.

A similar record as to the United States up to 1880, inclusive, gives 26 localized epidemics, with 77 cases (a few cases number not known) and 26 deaths. While neither reckoning shows absolutely the relative degree of the disease, yet it does indicate that we are to look abroad for its greatest prevalence. But, as it appears "that only one-fourth of those eating the flesh from a trichinosed hog are affected with trichinosis," and, as Pagenstecher says, "five per cent. of the cadavers in Berlin hospitals contain trichinæ," and as the disease is well proven to exist here, we cannot be too diligent in preventing it from becoming as prevalent here as it is in foreign countries. All the more because of our immense production, and of the demands of home and foreign health. The last census gives the aggregate of swine at 37,396,621, which includes only those kept by persons having land.

I am aware that large statements come to us (such as one, not long since, from Lyons, in France, and another from Boston, in the United States), which would indicate a much greater prevalence of trichinosed pork than is generally supposed.

This might occur from the observer having lighted upon a special run of the disease.

But I have also learned that the observation of microscopists, like those of clinicians, are not always correct; that their experiments, like our experience, although honest, may have sources of error, and that the cautions given by Surgeon Sternberg, on page 5 of his excellent preface to his "Translation of Magnin's Brochure on the Bacteria," are to be observed as closely as what is seen under the microscope.

The French decrees of February last, the action of the English government, and that of some States on the continent, led our own government to an investigation which needs to be more exact and extended, but which, nevertheless, shows that the prohibition of importation was not well advised.

While there is still a kind of restrictive legislation which is

unwise, yet we believe there is more of a disposition to get at the precise facts in a more authentic way, and to regulate commerce on the basis thereof. In this connection I submit a brief extract from a debate in the House of Lords, on May 16, of the present year, a summary in the New York *Times* of September 14, 1881, based on the testimony of Consul Mason, of Basle, to our government, and a communication from Dr. Lyman, Veterinarian of the United States Department of Agriculture, of date October 29, 1881, in answer to certain questions I had asked.

(*a*). In the House of Lords, May 16, of the present year, Lord Stanley, of Alderly, asked Her Majesty's Government whether they would prohibit the importations (alluding to pork), of which a large proportion were infected with trichinæ and bacilli; also of such oleomargerine or butterine as contained the grease of pigs suffering from the new disease of swine at Chicago, and the fat of horses infected with disease or such as was adulterated with soapstone. The Marquis of Huntley said he could assure the noble lord that there was no established case of American hams being infected with trichinæ, and there had been one case only by infection by bacilli. (See Fleming *Vet. Journal*, June, 1881, p. 462).

Consul Mason writes from Basle that abundant and unmistakable evidence shows that the panic about American meats has begun to decline. From the first it was artificially created, mainly by such official action as the French decree in February prohibiting importation of American pork, and a published document from the Minister of the Interior in Neufchatel, asserting that the microscope had shown more than half of American hams and canned meats to be infected. That canton takes most of its 150,000,000f. of exports from this country in the form of meats, and the trade has been almost destroyed for the present, although no case of trichinosis has ever been reported there. But as consumers, who have taken no part in the scare, have found themselves suffering from advanced prices, they have begun to complain, and as the sales of domestic meats, in the difficulty of discrimination, have been affected, dealers who thought they saw "protection" in the scare have joined the demand for removal of the prohibition. The leading meat importer in Basle has

for several years subjected all his meats, from whatever country, to microscopic examination by the official city inspector; the occasional pieces containing traces of defunct trichinæ were saved, and were experimentally fed to hogs, chickens, cats and dogs, but at the end of six months no trace of disease could be found in the flesh of these animals. The "syndicate of lard and salted meats" of Bordeaux made an elaborate protest against the French decree, saying that in twenty-five years only a single case of the disease had occurred in France, and the character of that was disputed; that Germany has excluded only chopped meat for sausages; that there is no prohibition in Europe, except in Italy, and perhaps in Spain; that no decrees can keep out American meats, although disguise may be forced; and that it is supreme folly to injure the people of France for the sake of an imaginary danger. The Swiss *Journal de Geneve* remarks that the Ministers in Paris, London and Brussels have been compelled to acknowledge that not a case of trichinosis from American meats has ever been authoritatively shown to have occurred in Belgium, France or England, and it ascribes the scare to the jealousy of European meat growers and the desire of speculators in America to break the pork market, saying that a single Chicago firm is reported to have cleared 30,000,000 francs in one year by a skillful combination. Mr. Mason thinks the foreign trade in salted meats can never be fully restored without establishing in this country a system of official inspection which shall carry with it the weight of State or Federal authority. German municipal experience, notably in Berlin, has shown that a capable inspector can examine several hundred pieces per day, and he thinks young men of ordinary education and good eyesight could be trained in a fortnight, by a competent microscopist, to do this work, and that the cost need not exceed three cents per hog. Until this or some equivalent step is taken, the one per cent. of diseased hogs admitted to exist here will be a serious obstacle to the export trade in meats, for European meats are officially inspected, and to be able to say that American are not, is to give opponents of our trade the power to keep up a prejudice. An official report in review of the whole subject is needed, showing by statistics the extent of the hog product in this country, the

immunity of our people from disease, how many hogs die of cholera and transportation accidents, and what becomes of them, and the actual values of land and corn in the pork-growing States. It is often published, and is more or less believed, that the comparative cheapness of our meats abroad is because the bad or questionable qualities are exported. This can be combated by showing that the cost of growing the best quality here permits exporting it at the prices it bears abroad. Such a report should be published under an official seal, which is, of all things, the most authoritative with a European, and should be distributed abroad.

DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C., October 29, 1881.

*E. M. Hunt, M.D., Secretary, etc., State Board of Health, Trenton, N. J.,*

MY DEAR DOCTOR:—Your letter of inquiry of the 22d inst. is duly received. I will answer your questions as fully as I am able to do so. You ask:

1. State the comparative number of cases of trichinæ that have been identified as to their origin, viz.: how many American, English, French, Continental?

If this refers, as I suppose it does, to disease in humans, I am unable to answer.

2. How many live hogs are claimed to have come from America with trichinæ?

From the annual report of the English Veterinary Department for 1879 I copy the following:

"The slaughter of large numbers of American swine at the port of landing afforded opportunity of obtaining specimens of flesh for examination, with the view to ascertain what proportion of the animals were infected with trichinæ. The inspectors of the Veterinary Department examined two hundred and seventy-nine separate portions of swine's flesh which were sent from Liverpool, and detected living trichinæ in three specimens. * * * No doubt, therefore, existed as to the dangerous character of American pork, and a consultation on the subject took place with the medical officers of the Local Government Board. The matter was also discussed in the House of Commons; but

it was not deemed expedient to prohibit the introduction of American pork into this country, for the reason that such a measure would have damaged the trade without producing any satisfactory results; * * * besides which, trichinosis among swine is known to exist in Germany, and it probably exists in other exporting countries, so that nothing short of total prohibition of swine flesh in all forms, from all sources, would have been effectual. The possibility of our own swine being to some extent infected with trichinæ has been suggested; the result, however, of many examinations has, up to this time, been negative."

I do not know that Germany or France has even examined for this disease in live hogs.

3. How much shipped pork has been identified with it?

To foreign countries, Germany reports each year some, if I remember rightly, three or four thousand "pieces" of American pork. Where they get them, what a piece is, or what percentage of pieces examined and found diseased, I have never heard of their saying. I do not know that they have made any publicly, neither do I know that other foreign countries have done any more than to say that they found, upon examination, that trichinæ existed in American pork, as they had seen it arriving in their countries.

4. Have Western hogs in any one section been more affected?

It has no such favorite locality that we know of, although this will be a good ground for future investigation.

5. Are trichinæ found in the fat, as in cold tried lard?

I have until now thought not. Professor Taylor, of this department (microscopist), tells me that in the journal of the Microscopical Association he has recently seen that they have been found in fat. I should rather see than believe without so doing. A veterinarian, of New England, informed me on April 14 last, that he had examined portions from 2,701 Western hogs, obtained in Boston, 154 of which he found infected—*i. e.*, one case to each 17 54–100 hogs examined. He tells me that he will make a statement to this Savannah meeting, that he has examined portions of 8,773 Western animals, and has found one case to every twenty five animals. You will see that there is a great difference between his first (April) examination and this

one, and his result is so greatly different from the English examination of our hogs, above mentioned, and so much above any known percentage among animals of every other country, that I cannot but entertain doubts of the value of his examination.

* * * * * * * *

While such facts are to be borne in mind, the gravity of the disease, its cosmopolitan character, and the interest both of health, life and trade, require that, under the head and authority of the United States government, there should be such testing of facts as will be fully reliable, and not depend on single observers, and that some plan may be devised to secure both to animals and mankind immunity from this direful invasion.

The latest and most graphic outline of the disease is given incidentally in a scientific address by the veteran naturalist, Richard Owen, who gave it the name trichinæ. It is worthy of transcription: "The finding of the wormlet within the cysticule in 1835 (proceedings of the Zoölogical Society of London, February 21, 1835; also Transactions, ibid. 4 to Vol. I), and the more important discovery of Dr. Zenker, of Dresden, in 1860, of its causative relations to a direful disease, have demonstrated that the several groups of symptoms to which I have referred under the respective technical denominations applied to their groups, may, one and all, be due to the deglutition of trichinæ spiralis."

It is thus all the more serious, because the symptoms simulate so many diseases, such as dyspepsia, common diarrhœa, dysentery, peritonitis, pneumonia, rheumatism, gout, typhoid fever and endocarditis. The larvæ of this wormlet in the flesh of the animal it infested, being introduced as food into the human stomach, finds in that warm cavity an environment of mucochymous nutriment, in which it rapidly matures, acquires activities, and develops its generative organs and products. If permitted to pass into the intestinal canal, it there excludes its progeny, which also rapidly acquire their full size and procreative faculty. But the grave symptoms of their presence are due to the curious migratory instincts of the young trichinæ, which impels them to make their escape by perforating the tunic of the

intestines, in the course of which operation the majority find their way into the venous capillaries. Such as wriggle through the meshes of the vascular network, bore their way through the serous tunic of the gut and pass into the abdominal cavity, whereupon the peritonitic are complicated with the enteritic symptoms. But the majority are carried to the right side of the heart, and thence by the pulmonary artery to the lungs. Treading then the capillaries continuous with the commencement of the pulmonary veins, the trichinæ are brought back to the heart. As many as may have burrowed into the vascular walls of the right or left ventricle, or may have got into the cavity of the pericardium, give rise to the symptoms summed up in the terms of art already cited.

Trichinæ, which may have strayed into the tissue of the lungs, or which may have wriggled through the pulmonic serous covering, and from the pleural cavity may have invaded the serous membrane on their way to the intercostal muscles, add the pleuritic and pulmonic to the pericarditic symptoms. The natural affinity or attraction of the trichinæ is to myonine or the muscular tissue. There their wanderings come to an end. They are conveyed so soon and so rapidly by branches of the carotids to the muscles of the larynx that the trichinæ are there found most constantly and abundantly, but usually so vast is their number that they are carried to the voluntary muscles of the entire body. In the exceedingly delicate connective tissue of the ultimate bundles of the ultimate fibrils, the young trichinæ coil themselves up to their larval repose, exciting no other organic change than an overflow of plasma, which condenses with the contiguous cellulosity and becomes molded into the shape of an elliptic case, in which may be seen under the microscopic compressorium one or more of the tiny worms disposed in two or more circular coils.

An ounce of hog's muscle has been found to contain 85,000 trichinæ, while Thudicum estimated 40,000,000 in the body of a German who died in the London Hospital, and Cobbold, who reviewed the calculation, thought this below the number. He calculated in the flesh of a hog, that had caused an epidemic in England, 80,000,000. Thus far the record of cases in Germany

and of endemics thereof has been ahead of that of any other country.

The number of cases recorded by Glazier for the United States, from 1864 to 1880, is seventy-eight, while post-mortems have afforded proof of their existence many times.

We believe there is nothing to point to this disease as more prevalent in the United States than in other countries. Yet it is prevalent enough, and its occurrence possible and serious enough to demand the closest attention of all those whose effort it is to prevent disease.

The immense swine production and pork traffic of this country, of course, makes the aggregate number of cases larger, and at the same time, enforces the interest and the duty of leaving no measures that are expedient untried to limit or destroy the disease. Not because it is an American parasite, for Heller (Ziemssen Enc. III., p. 628) says that trichinæ have been found in all countries where search has been made for them, and Pagenstetcher says: "They are cosmopolitan with man, hogs, rats and mice."

As it is not like a disease spread through the air, and does not rapidly pass from one animal to another, save where there is a source of production, there are great encouragements for an attempt to eradicate the disease. There is some reason to believe that rats frequenting hog pens are often its conveyancers, and that we need some "Pied Piper of Hamelin" to drive them all into the sea. Cobbold says infection must be due to the facilities for swallowing garbage, especially dead rats. It is an established fact of natural history that hogs are not by nature filthy in their habits or in their choice of food. If mankind thrust upon them all sorts of improper food, all the indignation must not be projected against the brute. A treatise on the hygienic management of swine is in order, especially as they have become subjected to such invasions.

All serious diseases which are either directly transmissable to man, or which by the diseased or imperfect meat and milk they put on the market, or by the actual loss of food supply they occasion, must attract the attention of all sanitarians.

And as our foreign trade is being so much affected, both in the interests of health and of commerce, we should join in consultation and advice with those who have to guard our commercial and national interests.

We may call it prejudice or retaliation, and to some extent correct the distorted views of some of our British and continental friends, but so long as there is a basis of truth it behooves us, both in our home and foreign interests, to do all that is intelligent and practicable in stamping out or limiting these diseases.

For this we have a few suggestions to make:

1. There is a need of accurate study into causes as well as into methods of limitation. Our government has done some good work in the way of investigation, and the present distinguished head of the Agricultural Department, Dr. Loring, is by profession, agricultural knowledge and executive experience, well fitted to do more.

There are some veterinarians that are at work, but the number of these is small, and it is difficult to find enough others who are capable.

We feel that medical men and others of this association should feel these investigations to be as worthy of their labor as those directed to some human diseases. The time has come when medical and sanitary experts should recognize the study of the comparative plagues as a part of their work and devote the closest study thereto.

2. Some form of direct oversight should be exercised in every State over the communicable disease of animals. There is no more economical outlay than that which guards our milk and meat supply. An authority in every State to oversee the work and to circulate information among farmers and stock raisers, to obtain knowledge through local township committees, supervisors or health boards of special outbreaks and to secure from assessors exact statements each year of all deaths and known causes of deaths of animals would be of essential service. Thus infected districts would soon be singled out and the disease ere long eradicated. In Germany microscopical examination of pork has been made compulsory.

3. Public abattoirs and inspection thereat should be encouraged.

4. All live stock sent out of the country should be inspected at the point of final shipment by a government veterinary inspector.

5. Pork packing and smoking establishments should guarantee their methods, and be subject to penalty if the meats furnished by them are proven to have caused disease. Trade marks and brands are easily made, and severe penalties to producers for any meat that is proved to have caused sickness is one of the best precautions. It will then be the interest of large establishments to protect themselves by sampling lots with the microscope and by other expert examinations.

6. A system of inspection is desirable; but we do not wholly rely upon it, as being exceedingly expensive, and as not alone accomplishing as much as when joined with other methods.

7. All wholesale lots of chopped meats or sausage or of potted meats should be certified by competent meat inspectors.

8. It should be known that thorough salting and cooking remove all risks from animal parasites. Virchow, in treating of this disease, expresses his regret that the old forms of curing and smoking have had so many substitutes.

9. Careful inquiries should be made as to the presence of parasites in fats, and as to the fats of diseased meats, lest lard and oleomargerine, etc., may be so prepared as not to be subjected to proper heat, and our risks be increased in this direction.

In view, therefore, of the vast interests involved to health, not less than to commerce, we trust this association will direct still more careful attention to the communicable diseases of animals, and seek to find their causes, and arrest their courses, since, be it man or beast, it is a common concern in a common welfare.

We append the approximate summary of the last census of all live stock in the States and Territories, as found on farms or with those owning land. The aggregate shows a yearly product of one hundred million, if we estimate all, used as food:

FOOD STOCK IN THE UNITED STATES.

| STATES AND TERRITORIES. | Working Oxen. | Milch Cows. | Other Cattle. | Sheep. | Swine. |
|---|---|---|---|---|---|
| Alabama | 75,534 | 271,443 | 404,213 | 521,267 | 1,252,462 |
| Arizona | 984 | 9,156 | 34,843 | 112,107 | 3,819 |
| Arkansas | 25,444 | 249,407 | 433,392 | 375,795 | 1,565,098 |
| California | 2,288 | 210,078 | 451,941 | 5,644,341 | 603,339 |
| Colorado | 8,179 | 28,770 | 315,989 | 994,844 | 7,656 |
| Connecticut | 28,399 | 116,198 | 92,121 | 104,592 | 63,662 |
| Dakota | 11,418 | 40,572 | 88,825 | 47,116 | 63,394 |
| Delaware | 5,818 | 27,284 | 29,450 | 40,044 | 48,186 |
| District of Columbia | 4 | 1,292 | 271 | ..... | 1,032 |
| Florida | 16,141 | 30,359 | 414,869 | 80,169 | 287,051 |
| Georgia | 50,026 | 315,073 | 544,812 | 752,490 | 1,471,003 |
| Idaho | 737 | 12,838 | 71,292 | 39,246 | 14,178 |
| Illinois | 3,346 | 865,913 | 1,515,093 | 1,544,728 | 5,170,118 |
| Indiana | 3,970 | 504,944 | 865,136 | 1,614,073 | 3,186,413 |
| Iowa | 2,504 | 854,097 | 1,754,341 | 669,510 | 6,034,316 |
| Kansas | 16,789 | 418,333 | 1,015,935 | 733,275 | 1,787,969 |
| Kentucky | 36,076 | 301,882 | 494,743 | 1,678,515 | 2,225,225 |
| Louisiana | 41,729 | 146,454 | 282,418 | 203,177 | 633,489 |
| Maine | 43,049 | 150,845 | 140,527 | 944,856 | 74,269 |
| Maryland | 22,246 | 122,907 | 117,387 | 306,960 | 335,408 |
| Massachusetts | 14,571 | 150,505 | 96,045 | 109,796 | 80,123 |
| Michigan | 39,493 | 384,573 | 467,060 | 3,065,533 | 964,071 |
| Missouri | 9,020 | 661,405 | 1,410,487 | 2,193,006 | 4,573,123 |
| Montana | 936 | 11,308 | 160,143 | 211,225 | 10,278 |
| Nebraska | 7,234 | 161,609 | 613,129 | 285,935 | 1,241,724 |
| Nevada | 765 | 13,319 | 158,137 | 193,894 | 9,080 |
| New Jersey | 2,022 | 152,078 | 69,786 | 237,368 | 219,069 |
| New York | 39,633 | 1,437,855 | 852,283 | 2,718,093 | 751,916 |
| North Carolina | 50,188 | 232,133 | 375,105 | 690,894 | 1,453,541 |
| Tennessee | 27,337 | 303,832 | 444,736 | 1,079,743 | 2,158,169 |
| Virginia | 54,709 | 243,061 | 388,414 | 823,776 | 956,451 |
| Wisconsin | 28,762 | 478,374 | 622,005 | 1,921,047 | 1,128,239 |
| | 671,351 | 8,897,917 | 14,811,928 | 30,027,415 | 37,369,621 |

RECAPITULATION.

| | |
|---|---|
| Oxen | 671,351 |
| Milch Cows | 8,897,917 |
| Other Cattle | 14,811,928 |
| Sheep | 30,027,415 |
| Swine | 37, 396,621 |
| | 91,805,232 |

—*Journal of Comp. Med. and Surgery.*

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REMARKS ON THE TREATMENT OF GUNSHOT WOUNDS OF THE ABDOMEN IN RELATION TO MODERN PERITONEAL SURGERY. By J. MARION SIMS, M. D., LL.D., etc.

Occasionally wounds of the abdomen above the brim of the pelvis recover; but it is always when there is a chance for drainage. Dr. Pallen saw a Confederate soldier recover, where a large part of the abdominal parietes were blown off by a bursting shell. The wound was immense, and diagonally across the abdomen. The bowels fell on the ground, but were not wounded.

They were washed clean, returned to their proper place, and the wound was closed as well as possible with strong coarse thread, leaving an open space six inches long and two inches wide, through which the intestines could be seen. The were retained *in situ* by compress and bandage, and the man eventually recovered without a single drawback. He recovered because the intestines were not injured, and because there was drainage. This was a case in which we might have supposed there was danger of peritonitis; but peritonitis and free drainage are antagonistic.

Dr. Newall, of New Brunswick, New Jersey, reports to me the following interesting case: A large man, with a "full abdomen," shot himself accidentally with a shot-gun in 1847. The charge entered the abdomen an inch below the sternum, and to the left of the median line. Introducing the finger, Dr. Newell plainly felt the left lobe of the liver and the inner wall of the abdomen. The next day twenty-nine shot passed the bowels. Three shot made their exit one inch and a half above the crest of the ilium, and three and a half inches from the spine. "An incision was made here into the cavity of the abdomen, and I removed the gun-wad, composed of tow, paper, shot, a printer's type and a piece of the man's vest—in all, sufficient to fill a tumbler half-full. The patient was kept under the influence of opium for several days. He recovered completely, and is now living." In this case Dr. Newall did, thirty-four years ago, what I now advise to be done in all cases of gun-shot wounds of the abdominal cavity. His patient was saved by the removal of foreign bodies, and by an opening in the iliac region, which permitted free drainage.

Having now brought forward all the facts observed by myself and by personal friends, let us turn to the records of the American Civil War for further facts illustrating this important question.

1. *Wounds of the Stomach.*—There were sixty-four shot wounds of the stomach, more or less complicated with wounds of neighboring parts. There was but one well authenticated case of recovery. Other reported cases of recovery were carefully analyzed by Otis, and pronounced wholly unreliable.

There were nine cases of bayonet wounds penetrating the peritoneal cavity without lesion of viscera. Six terminated favor-

ably. Seven had traumatic peritonitis. The diagnoses were not clear in every case.

There were four fatal punctured or incised wounds of the stomach. Five fatal shot wounds are reported as having survived seven, eight and nine days, and one forty days. The length of time that these survived indicates clearly how different the result might have been in some of them, if prompt measures had been taken for exploring the seat and nature of the wound, and resorting to gastrorrhaphy, the only rational treatment in such cases. There was not a single case of gastrorraphy during the whole war. This is explained by the fact that the stomach does not prolapse through an ordinary bullet wound; and surgeons did not then dare to enlarge such wounds to investigate the nature and extent of internal injuries.

There were three cases of secondary fistulæ, which terminated fatally. One lived four weeks, another seven weeks, and the third eighty days. Timely interference and gastrorrhaphy would almost certainly have saved all of them.

Considering the facility and comparative safety with which gastric fistulæ are now established by surgical means, it is a little surprising that (according to Otis) we have the record of but two cases which have survived shot wounds of the stomach for any length of time. The first "is that of Maillot, wounded in Möllendorf's repulse of the French at Kaiserslautern, in May, 1794. In this little known, but authentic case, recorded by Baron Percy, the fistulæ gradually contracted, and ultimately closed." The other is the well known case of Alexis St. Martin, made famous by Beaumont, who, nearly fifty years ago (1833) published an account of the digestibility of various article of diet as observed in the stomach of St. Martin. Beaumont states that St. Martin, a Canadian, of French parentage, was about eighteen years old when wounded (June 6, 1822) at Fort Mackinau, where Dr. Beaumont was stationed as surgeon to the post. As St. Martin died only a few months ago, he survived injury about fifty-nine years.

Dr. Otis sums up wounds of the stomach in the following words: There were "four fatal punctured or incised wounds; one incontestable recovery from a shot perforation; a few recov-

eries from shot wounds in the gastric region, in which the diagnoses were not determined unequivocally; and nearly sixty fatal cases of more or less complicated shot-wounds of the stomach."

The records of military surgery (according to Otis), from its earliest period to the present time, furnish but six or seven well-authenticated cases of recovery from shot-wounds of the stomach, with or without fistula. To this list must now be added another example of recovery from undoubted shot-wound of the stomach. It is the case of the distinguished gynæcologist, Dr. R. Beverly Cole, of San Francisco. I have just received a letter from him, dated London, January 17, 1882, detailing the following particulars: Dr. Beverly Cole, at the age of twenty five, resided in San Francisco, where he had suffered from repeated attacks of intermittent fever. When just recovering from one of these, he left his house, on June 3, 1854, without taking breakfast; his stomach was therefore empty. Whilst in the act of packing his trunk, preparatory to making a visit to the country, a Colt's six-inch revolver (old pattern) fell from his inside breast coat pocket, the body being bent over the trunk at the time, and the hammer of the pistol striking the edge of the trunk as it fell, the cap was exploded, and the ball entered the breast—the muzzle not being more than eight inches from the body. He did not fall, but, raising himself up, he tore open his vest and shirt, and saw that he was wounded. Syncope occurring, a friend caught and laid him on a sofa near by. When consciousness returned, he found himself surrounded by a number of his medical friends, among whom were Drs. C. S. Tripler and H. S. Hewitt, of the United States army, and Drs. Valentine Mott, Jr., A. B. Stout and Charles Bertody. He was totally blind, but recognized them all by their voices. He heard Dr. Tripler say: "Never mind the ball; it can be sought for at any future time. We must first bring about reaction." Soon after this he was suddenly seized with an indescribable pressure in the rectum, and a desire to defæcate. Morphia was administered, sinapisms were applied to the extremities, and ammonia was given in very minute quantities—minute, for fear of its escaping through the gastric wound into the peritoneal cavity. As reaction came on, the sensation in the rectum increased till he vomited nearly a wash-hand bowlful of blood,

University of Michigan

black and partially coagulated. It was estimated by the attending physicians to be from a quart to a half-gallon, or more. This gave some relief. But the rectal pain and tenesmus were not completely relieved till he was brought fully under the influence of morphia. As he lay on his back, his clothing was all cut away without turning him on either side, and he was then placed in bed. The collapse was very complete, and several hours elapsed before reaction was fully established. During all this time he could not see; but from the conversation of the surgeons and from the frequency with which they examined the cardiac region, he inferred that death was imminent. The sinapisms were forgotten, and were not removed for four or five hours, and they produced sloughing ulcers, which were nearly twelve months in healing. When reaction was fully established, Dr. Tripler passed the end of the little finger along the track of the ball, through the conjoined cartilages of the seventh and eighth ribs—an inch and a half to the left of the median line of the ensiform cartilage. He then passed a probe along it into the stomach. The lodgment of the ball was not discovered for two weeks or more later. It was then found between the eleventh and twelfth ribs on the back, two inches to the left of the median line. This showed that the course of the ball was directly through the body—the difference between the parallels of entrance and exit being due to the difference between the bent and the erect posture.

For three weeks he was nourished by the rectum. Beef-tea was thus given every three hours; at first one ounce, then two, then three, and finally four ounces. During this time a small quantity of beef tea was given by the mouth, but it produced such severe pain, as it entered the stomach, that it was not soon repeated. Small lumps of ice were allowed to quench the thirst produced by the morphia, which was given in half-grain doses three or four times a day, or whenever needed. On the twelfth day the bowels were moved by enema. On the twenty-first day he was removed to his own home. He then began to suffer from severe paroxysms of pain in the back, which were so intense as to obstruct respiration. They continued without abatement for three weeks. Dr. Tripler then removed the ball, and they ceased. He was confined to bed six weeks. When he got up it

was discovered that the left shoulder was lower than the right, the result of a constrained position while in bed; and there was a dragging sensation in the gastric region, not only disagreeable, but quite painful, as if the stomach had formed unnatural adhesions. On account of these disabilities, he was compelled to go on crutches for two years before his body attained its natural erect manner of carriage.

The posterior wound closed in a few days after the removal of the ball; but the anterior wound did not close for four years, which was doubtless due to the injury of the cartilages, which are always tardy in reparation. For many years an ordinarily hearty meal (in consequence of adhesions between the stomach and contiguous parts) produced a dragging, uneasy sensation, which rendered life very uncomfortable.

Recovery was eventually complete; and no one now would suspect that he had ever been the subject of such a serious accident. A peculiar feature of the case was total loss of vision for three days, during which time he could not distinguish daylight. There can be no doubt that the ball in this case perforated the stomach. The large quantity of blood vomited soon after the wounding establishes the diagnosis beyond question. From the point of entrance and direction of the ball, it must have passed through the stomach, below the lesser curvature. As the ball was very small, the wound of the stomach was likewise very small; hence there was less probability of gastric effusion than if the ball had been larger. But recovery was chiefly due to the fact that the stomach was quite empty at the time of the accident. If it had been even partially full there would have been effusion into the peritoneal cavity, followed by certain death.

The history of Dr. Beverly Cole's case was published in the *Detroit Medical Journal* in 1855 or 1856, by Dr. C. S. Tripler, United States Army. But as Dr. Otis insinuated, in a note to the *Surgical History of the War* (Part II., "Surgery"), that the case was not incontestably one of the stomach, I place it on record here that others may judge for themselves.

2. *Wounds of Small Intestines.*—Of about six hundred and fifty cases of penetrating wounds of the abdomen during the war, fifty were of the small intestines, eighty-nine of the large intes-

tines, and over five hundred in which the location of the wound was not discriminated, or was complicated with other lesions. Very few sword or bayonet wounds of the abdomen came under treatment, but a number of such injuries were observed among the slain on the field of battle. Wounds of the small intestines are more frequent than those of other portions of the alimentary canal, and are attended with higher mortality. They are more exposed to injury, being less protected by bony structure than other viscera. The ileum is most exposed, jejunum less, and the duodenum still less. Wounds of this portion of the canal are regarded as almost necessarily fatal. Of shot wounds of the small intestines during the war, Otis says: "It may still be doubted if an incontestable instance of recovery was observed." There were five cases of wounds of the duodenum, all complicated with wounds of other organs. They all died. One survived eight days; another twenty-four days. If the external wound had been sufficiently enlarged in time, the wounded portions might have been exsected, and the ends sutured, with chance of recovery.

3. *Wounds of Large Intestines.*—Injuries of this group are less fatal than wounds of small intestines. There were a few instances of recovery from shot wounds of the transverse colon; many after perforation of the cæcum and ascending portion of the bowel, and a still larger number in wounds of the sigmoid flexure and contiguous part of the descending colon. Many of these were complicated with injuries of the innominata. Nearly all resulted in fæcal fistulæ, which usually closed after a while without surgical interference. There were, in all, fifty-nine recoveries out of eighty-nine shot wounds of the cæcal and sigmoid extremities of the large intestine. Fæcal fistulæ persisted in nine, and were closed in fifty; seventeen within a month, twenty-eight within a year, and five at periods from one to five years. Ten per cent. of all slain in battle die of wounds of the abdomen, and from three to four per cent. of the wounded who come under treatment are wounded in the abdomen.

4. *Wounds of the Bladder.*—Baron Larrey was the first to show that gun-shot wounds of the bladder were less dangerous than those made by puncture or incision; because the tissues are

so crushed by the missile that eschars are produced, which protect the connective tissues from urinary infiltration. There was no case of punctured, incised or lacerated wound of the bladder in our war. Of one hundred and eighty-three shot wounds of the bladder, eighty-seven (47.5 per cent.) survived. A large majority of these suffered from grave disabilities, and many from distressing infirmities, a few of them dying after years of suffering; several recovered, with permanent urinary fistulæ. Some had recto-vesical fistulæ, which closed early in a few, and later in others. However, it is rare to find the functions of the bladder perfectly restored after shot injuries. Shot wounds of the bladder are often complicated by the presence of foreign substances in it—such as bullet, bone or other material—which serve as nuclei for calculous deposits. There were twenty-one cystotomies for the removal of such formations. Many cases died from infiltration of urine into the cellular tissue, and many from extravasation of urine into the peritoneal cavity. Cystorraphy, recommended by Legouest, was not practiced.

The teachings of Vincent, of Lyons, and of Fischer, of Buda-Pesth, at the late International Medical Congress, alluded to in early part of this paper, prove that we may now safely undertake cystorrhaphy in all wounds of the bladder. Abdominal section, and cystorrhaphy, and clearing out thoroughly the peritoneal cavity, are the only means of safety in shot or other wounds of the bladder, where there is urinary extravasation into the peritoneum.

5. *Shot Wounds of the Rectum.*—One hundred and three shot-wounds of the rectum were reported, of which forty-four (or 42.7 per cent.) resulted fatally. Thirty-four of the cases, of which four were fatal, were complicated with wounds of the bladder. Fæcal fistulæ, after shot perforation of the rectum, were not uncommon, and were more persistent than cæcal or sigmoid fistulæ. Shot wounds of the rectum are not so dangerous as those of the upper bowels, but are about on a par with wounds of the cæcal and sigmoid ends of the colon. Hæmorrhage was not a frequent complication of shot-wounds of the rectum.—*British Medical Journal.*

## A STUDY OF THE PERIODS OF INCUBATION OF THE COMMUNICABLE DISEASES.* BY BENJAMIN WARD RICHARDSON, M.D., F.R.C.P., F.R.S.

The points I propose for discussion are the following:

1. The precise application of the term incubation, and to what diseases it should be applied?

2. The amount of absolute knowledge of the period of incubation of the more common communicable diseases?

3. The differences of opinion on this subject; do they depend on fault of observation, or on the circumstance that there are, in the same diseases, varying periods of incubation, the variations being under no, as yet, defined rule?

4. If it be seen that there are differences of periods in the same diseases, upon what may such differences depend?

5. The practical lessons which arise from the facts we at present possess, and the extent to which our knowledge may be rendered available in regard to direction in the prevention and treatment of disease?

The period in the course of a disease to which we should apply the term incubation, and the diseases to which we should strictly apply the term, are the two first points deserving consideration.

At the outset this may seem to be a subject easy enough to settle, but when the mind comes down to it, it is not at all easy. We simplify somewhat by saying that the term is to be limited to those instances in which, after a certain specific poisonous particle has been taken into a living body, certain indications of the action of that specific poisonous matter has been manifested. We say that the period between the introduction of the poisonous particle, and the appearance of manifestation of action, is the period of incubation, but we fail to be unanimous on the question —What is the accepted first sign of such manifestation? Is that first sign any sign, or one particular sign? Is it a local sign, or is it a general or systemic sign? If, again, it be a systemic sign, is it one systemic sign, or two, or more, or one of many?

Let me give a small illustration of what I mean. The older

* Read before the Association of Medical Officers of Health, Friday, May 20th, 1881.

pracitioners, when they inoculated small-pox, ruled that the orange-colored eruption around the needle-puncture came on from the fourth to the fifth day, followed by a distinct vesicular rising, with pain in the axilla, on the seventh day, and systemic pain—pain in the back and limbs, and head—with rigor and fever on the ninth or tenth day, and appearance of a general eruption on the eleventh day. What here was the period of incubation? Was it from the time of the insertion to the occurence of pain in the axilla, or to the rigor with pain in the back and the limbs, or to the general eruption? In vaccinia in these days, we meet with the question—Is the appearance of the local eruption at the point of puncture, and the formation of the vesicle, to be counted as the end of the period of incubation; or is the after fever, or other systemic symptom, to be taken as the close of the period? I have known a case of vaccinia in which there has been no indication of effect at all, except the local manifestation. In such a case am I to say that the local change is sufficient when it is vesicular, when it is pustular, when it is maturative? Or am I, in such a case, to say there has been no period of incubation at all; that the whole process is abortive, and that the vaccinated is therefore either insusceptible or unprotected? I take this illustration because it is so very definite, because we know that the poisonous particle was inserted at a certain time, and can therefore be traced from that time into effect. When we come to the question of reception of the poison by a means less definite, we have more reason than ever for some decided rule. In scarlet fever what shall guide us? Shall it be the actual fact of a change in temperature? If so, shall it be preliminary depression of temperature? Or shall it be the first elevation of temperature that follows depression? Or, shall it be pain, or shall it be eruption? Until we can agree on these points, there can never be accuracy in our records.

I have studied very closely for two years past the various sides which this question presents, and by exclusion I have, for the moment, come to an opinion I am about with submission to offer to you. I would exclude all mere local manifestations, because I see that they may be presented and may not indicate that the disease has been incubated, in the full sense of that term. I ex-

clude pain, local or general, because that might be due to other causes than the action of the poisonous material, or if it were due to that it is too much of a subjective symptom to be reliable. I exclude eruption because it may not be present, although the disease may be incubated, or it may be looked over, or it may be transient and therefore not detected. I exclude mere rise of temperature because that alone might not be detected at its origin, but might have been long present before it was detected. But I accept as the safest of all the phenomena indicating that the period of incubation is declared, that sudden vibration between cold and heat, which we will call chill or rigor. This is at once a subjective and an objective phenomenon. The observer sees it in the pallor and coldness and shivering, and reactive fever of the affected. The subject of the attack is easily able to define its precise period of commencement and its course. Moreover, of all the phenomena it is the most certain. In my experience I never knew a case of a communicable disease that was not preceded by chill. In cholera, in which it might perhaps not be expected by those who have not seen the disease, according to my experience in the two epidemics I have witnessed, it was always present. "The chill came on," at such a time, was nearly the invariable sentence which fell from the lips of the stricken who were able to describe their own sufferings. There is moreover, a physiological reason for accepting chill or rigor as the indication that the poisonous particle has taken effect. The phenomenon is the natural indication that the disunion of normal action between the nervous and the vascular systems has taken place. It is like to the convulsive tremor which occurs when at a precise point during loss of blood the break between blood supply and nervous supply is interrupted. It is still more like the tremor which is invariably produced when an alkaloidal poison, like nicotine, shows its diffusion through the body, and, as we would say, declares that the period of its introduction is finished. If we had an alkaloid like nicotine which would increase in the body and by its increase diffuse up to the pitch of physiological action, we should rule that the incubation was finished when the tremor declared it. Granted then, that a disease runs a definable course, I should take the first rigor or chill as the first sign of the disease,

and should accept the intervening period between the introduction of the cause and the developement of the chill, as the true period of incubation.

In the next place we may study under the present head the diseases to which the term period of incubation may be properly applied. On this point there is nothing strictly definite amongst the members of the profession. We are probably pretty unanimous in assuming a stage of incubation to the following common affections, 25 in number:—

1. Plague.
2. Cholera.
3. Malignant pustule.
4. Scarlet fever.
5. Diphtheria and croup.
6. Influenza.
7. Pertussis.
8. Glanders.
9. Erysipelas.
10. Farcy.
11. Grease.
12. Dengue.
13. Gonorrhœa.
14. Relapsing fever.
15. Variola.
16. Vaccinia.
17. Varicella.
18. Measles.
19. Rotheln.
20. Typhus.
21. Typhoid.
22. Mumps.
23. Malarial fever.
24. Syphilis.
25. Hydrophobia.

But there are some others on which we should not be so unanimous, as for instance—

Catarrh.
Puerperal fever.
Pyæmia.
Hospital gangrene.
Sloughing phagedæna.
Phagedæna.
Remittent fever.
Intermittent fever.
Choleraic diarhœa.
Cerebro-spinal fever.
Carbuncle.

These last-named diseases all require to be more carefully observed in respect to period of incubation and first indication of defined symptoms before they can be proved to have a stage of incubation at all, and before, therefore, our knowledge can be said to be perfect in respect to them.

I would now venture to indicate what are the nearest approaches to the periods of incubation in the different diseases which present an undoubted stage of incubation. In preparing the chapters of a work on preventive medicine, I thought it worth the trouble to collate the views of all our best authorities on the subject, old and modern, and to bring them into a condensed form, adding thereto what I had myself observed from natural facts.

Without loss of time I will state the results in brief form, but I must not let the opportunity pass of expressing how deeply we are indebted to Dr. Squire for the insight he has shown in dividing the communicable diseases according to their periods of incubation. Following closely his admirable plan, but somewhat extending it, I divide the diseases attended with stages of incubation into five groups:—

*a. Shortest.*—Shortest Stage of Incubation—1 to 4 days.—Malignant cholera. Malignant pustule. Plague. Catarrh. Dissection wound diseases.

*b. Short*—Second Short Period—2 to 6 days.—Scarlet fever. Rosalia idiopathica. Diphtheria. Dengue. Erysipelas. Yellow fever. Pyæmia. Influenza. Pertussis. Glanders. Farcy. Grease. Croup. Puerperal fever.

*c. Medium.*—Medium Periods—5 to 8 days.—Relapsing fever. Gonorrhœa. Vaccinia. Inoculated variola.

*d. Long.*—Long Periods—10 to 15 days.—Small-pox. Varicella. Measles. Rötheln. Typhus. Typhoid. Mumps. Malarial fever.

*e. Longest.*—Longest Period—40 days or more.—Syphilis. Hydrophobia.

If we may accept these as the common expression of knowledge up to the present time we have still much to learn. We exclude several diseases altogether which probably have some stage of incubation, and we are obliged to grant exceptions in respect to those that admit of being more readily classed together.

[TO BE CONCLUDED IN AUGUST NUMBER.]

# Abstracts.

*Effects of Malaria on Man.*—In addition to the direct effects of malaria, a diathetic condition seems to be established which modifies other diseases. The effects of malaria are, indeed, most protean in form, not only in its own definite and well-marked pathological processes, but it simulates others. The stupor of typhus, the collapse of cholera, the high temperature of insolation, the sickness of an irritant poison, the convulsions of epilepsy or of dentition, may occur in the pernicious forms. It induces anæmia and general cachexia, with structural changes in the liver, spleen, or other viscera, neuralgia, asthma, and various other symptoms of disturbed innervation and sanguification, and it also appears to be in close etiological relation with dysentery, cholera, diarrhœa, beriberi, hydrocele, elephantiasis, bronchocele and hepatic disease. Whatever its nature may be, its action on the human economy is very striking; it affects the central nervous system, causing disturbance of vaso-motor action, paroxysms of fever, and congestion of the abdominal viscera, which may become periodic in recurrence, or pass on to structural changes in the liver and spleen, or intestinal mucous membrane. No one can have resided long in a malarious climate, such as Assam, without observing the cachectic, deteriorated aspect of the people, who, although they may never have had a single attack of fever, scarcely feel ill, and would resent being told so, are yet victims to the insidious action of the poison, and present evidences of anæmia, degenerate tissues and chronic visceral disease.—Croonian Lectures. Sir Joseph Fayrer, M.D., F.R.S., etc.

*Treatment of Epidemic Cerebro-Spinal Meningitis.*—We cull from the *Medical Times* the treatment advocated by Dr. Karl

Jaffé: The therapeutics of this disease are quickly summed up. The author approves of the advice of the older observers with regard to the ice treatment applied to the spine, and the use of narcotics, without which we can scarcely succeed even in the lightest cases. Blood-letting has only a very transitory effect. Of remedies, laxatives, especially calomel in large doses, are especially valuable. Mercurial inunctions in one case were without any influence worth mentioning. Prolonged bathing cannot generally be carried out, yet tepid and cool baths, when the temperature is high, are very useful. The medicamental antipyretics (quinia, salicylic acid, and also sodium benzoate) may be entirely discarded, because they are more uncertain than the baths, and they ruin the already weakened digestion. He found that the sick were always worse after their use, in the cases in which they were tried, so he finally gave it up. This medical nihilism will appear justified if we consider how largely those affected with meningitis perish, especially with the rapid form of the disease, how protracted is the convalescence, and what lasting injury must follow the use of every remedy and every means (we might here also include blood-letting), which in any way alters the digestive tract and affects the tissue-changes of the patient.

*Icterus Neonatorum.*—Birch Hirschfield, in an article in Virchow's *Archiv*, an abstract of which appears in the London *Lancet*, gives the following as the pathology of that hitherto obscure disease: It is very difficult to avoid associating the jaundice in some way with the disturbance of the hepatic circulation on the transfer of its chief blood supply from the umbilical vein, especially when regard is had to the conspicuous congestion and œdema of the liver, well described by Weber, which occur in cases in which the circulation through the umbilical cord is interrupted before the respiratory movements, by their effect on the right heart, afford an adequate compensation. The vessels in the hilus of the liver are surrounded by a dense layer of connective tissue, which is continued into the organ along the branches of the portal vein, and in cases in which there is venous obstruction in the liver, in consequence of hindered birth, this tissue is the seat of conspicuous œdema. A broad layer of gray

pulpy tissue encloses the vessels, and is seen also around the umbilical vein in its diaphragmatic portion, and may also extend to the gall-bladder. The microscopical appearances of this tissue are those of œdema, with a more or less abundant accumulation of round cells in the interstices of the tissue. This swelling of the tissue must compress the bile-ducts obviously, and, not only under these circumstances are the bile-ducts distended, but there may be a positive difficulty in squeezing the bile out of the gall-bladder in the duodenum, and in the latter there is a manifest deficiency of bile. In such cases, in which death occurs during the first day of life, commencing icterus may be distinctly detected, and the gradual increase of the jaundice in connection with this pathological condition, may be observed in patients in whom life continues longer, as cases reported by Birch Hirschfeld demonstrate.

*Cholera in West Africa.*—Recent information brings definite news of the imposition of quarantine, both maritime and inland, at British stations on the Gold Coast on account of cholera prevailing more or less among the Mohammedan population on the Upper Niger. The outbreak is believed to be an offshoot of the prevalence of the disease at Mecca and in the Hedjaz in the autumn of last year. Mohammedan pilgrims make their way from the Mohammedan population, in Western Soudan, across the whole breadth of the African Continent to Mecca, and it is surmised that these pilgrims, returning from the Holy Land of the Moslems at the time when cholera was prevailing there, introduced the disease to the banks of the Niger.—*London Lancet.*

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AT a séance of the French Academy of Medicine held May 9, Dr. Blanche read a communication discussing whether insanity should be considered a ground for divorce. His negative answer was subscribed to by Magnau and Charcot. It was based on the possibility of recovery. Even in incurable cases, there are phases of remission preceding the time when the disease ultimately became incurable, but in this case, death was not often long delayed.—*Arch. Gén. de Méd.*

INSANITY AND DIVORCE.—A recent English decision (*Med. and Surg. Reporter*) is of some interest in this connection. On the night of the marriage, the wife refused to allow it to be consummated. She was subsequently found, on examination by several alienists, to be a melancholiac, and mentally unfit to enter into a marriage contract. The court decided the marriage was null.

The editor of the *Journal of Nervous and Mental Disease*, commenting on the late resignation of all the members of the post graduate faculty of the University of the City of New York, believes that a post-graduate school of Medicine will be started, in which the teaching of neurology and psychiatry will hold an important position.

René has made a large number of experiments upon the rate of transmission of nerve force in man. He obtained $\frac{3.4}{100}$ of a second as the approximative duration of a cerebral act; and a rate of transmission of nerve force in a sensory nerve of 28 meters a second.

Paul Bert, following in the steps of M. Béchamp, has, by a series of experiments, discovered that oxidized water arrests fermentation from the presence of living organisms, but is inert in the presence of amorphous ferments (diastase, saliva, pancreatic juice, etc.)

Even the rudest and most empirical ideas of diseases presuppose ideas of the healthy states from which they are deviations; and obviously the diagnosis of diseases can become scientific only as there arises scientific knowledge of organic actions that are undiseased.

The idea that iron is an analeptic has come to an end. Alimentation is more than sufficient to furnish the two or three grams of iron which are contained in the totality of an adult's blood.—Dr. Luton, in *L' Union Médicale.*

CLINICS.

MONDAY.

Eye and Ear Infirmary—1.15 p. m., Otological, by Prof. Jones; 2.15 p. m., Ophthalmological, by Prof. Hotz.
Mercy Hospital—2 p. m., Medical, Profs. Hollister and Quine.
Rush Medical College—3 p. m., Dermatological and Venereal, by Prof. Hyde.
Woman's Medical College—2 p. m., Dermatological and Venereal, by Prof. Maynard.

TUESDAY.

Cook Co. Hospital—2 to 4 p. m., Medical and Surgical Clinics.
Mercy Hospital—2 p. m., Surgical Clinic, by Prof. Andrews.
Woman's Medical College—10 a. m., Prof. Ingals.

WEDNESDAY.

Chicago Medical College—2 p. m., Eye and Ear, by Prof. Jones.
Rush Medical College—2 p. m., Medical, by Dr. Bridge; 3 p. m., Ophthalmological and Otological, by Prof. Holmes; 3:30 to 4:30 p. m., Diseases of the Chest, by Dr. E. Fletcher Ingals.
Woman's Medical College—2 p. m., Eye and Ear, by Dr. W. T. Montgomery; 3 p. m., Diseases of Children, by Prof. Chas. W. Earle.
Eye and Ear Infirmary—2.30 p. m., Dr. E. J. Gardiner.

THURSDAY.

Chicago Medical College—2 p.m., Gynæcological, Prof. Dudley.
Rush Medical College—2 p. m., Diseases of Children, by Dr. Knox; 3 p. m., Diseases of the Nervous System, by Prof. Lyman.
Eye and Ear Infirmary—2 p. m., Ophthalmological, by Dr. Hotz.
Woman's Medical College—3 p. m., Surgical, by Prof. Owens.

FRIDAY.

Cook County Hospital—2 to 4 p. m., Medical and Surgical Clinics, by Profs. J. H. Hollister and R. N. Isham.
Mercy Hospital—2 p. m., Medical, by Prof. Davis.

SATURDAY.

Rush Medical College—2 p. m., Surgical, by Prof. Gunn.
Mercy Hospital—2 p. m., Surgical Clinic, by Prof. Andrews.
Chicago Medical College—3 p. m., Neurological, Prof. Jewell.
Woman's Medical College—2 p. m., Gynæcological, by Prof. Stevenson.
Daily Clinics, from 2 to 4 p. m., at the Central Free Dispensary, and at the South Side Dispensary.